



An
Bord
Pleanála

Inspector's Report

ABP-309306-21

Development	Construct 21 x turbines and all associated works.
Location	Castlebanny, County Kilkenny
Planning Authority	Kilkenny County Council
Applicant(s)	Springfield Renewables Ltd.
Type of Application	Strategic Infrastructure, Section 37E.
Submissions	Kilkenny County Council Transport Infrastructure Ireland DAU/NPWS Irish Water Irish Aviation Authority Public submissions x 70 (see over)
Date of Site Inspections:	24 th to 25 th June 2021 & 12 th May 2022
Date of Oral Hearing completion:	N/A
Inspector:	Karla Mc Bride

Public submissions

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1.0 INTRODUCTION

1.1 Introduction

This is an application to construct a 21-x turbine windfarm and associated works at Castlebanny in County Kilkenny.

1.2 Project Background

Springfield Renewables Limited requested pre-application consultations with the Board under Section 37B of the Planning and Development Act, 2000 (as amended) for the construction of 21 x wind turbines with a combined output in excess of 50MW (ABP-306229-19). Two pre-application meetings took place with the Board on 28th May and 29th July 2020, the prospective applicant requested closure of the process and the Board, in a letter dated 16th December 2020, determined that the proposed development would be strategic infrastructure and that an application for permission should be made directly to the Board. The records of the pre-application meetings, copied to the applicants, also contained a list of Prescribed Bodies that copies of the application should be forwarded to. This application comprises the proposed windfarm and ancillary infrastructure.

1.3 Site and location

The windfarm site is located within a rural area in SE County Kilkenny, to the E of Mullinavat, Ballyhale and Kocktopher, S of Thomastown and SW of Inistioge, and the M9 and national rail track (Dublin to Waterford) are located to the W. The site which is surrounded by a network of regional and local roads, and vehicular access would be off the R704 to the S.

The site comprises a moderately elevated and gently sloping Coillte coniferous forestry plantation which is surrounded by broad-leafed forestry, agricultural land, farm buildings and detached dwelling houses. The overall lands extend to c.1,434ha, of which c.1,200ha comprise a commercial forestry plantation in various stages of growth, and the windfarm would occupy an area of c.271ha.

The River Nore is located to the N and E of the site and the River Arrigle is located to the E, whilst the Derrylackey and Blackwater rivers are located to the W. The River Barrow and River Nore SAC and River Nore SPA are located to the N and E of the site, and the Lower River Suir SAC is located to the far S. The grid connection route crosses the River Arrigle to the E which forms part of the River Barrow and River Nore SAC. There are several heritage features in the surrounding area including Jerpoint Abbey, Knocktopher Abbey and Mount Juliet Estate to the N and W, along with several recreational and tourist amenities including golf courses, and the South Leinster Way traverses the S section of the site enroute to Mount Brandon.

The site does not contain any National Monuments. It contains 2 x Recorded Monuments including St. Molin's Cave in the NE section and a Ringfort. It does not contain any other significant features of archaeological or architectural interest, although there are several features of interest in the surrounding area and along the road network including an Ogham Stone to the SW and St. Molin's Well to the E.

There are 2 small operational windfarms located to the SE and S of the site (Ballymartin & Rahora) along with a number of permitted solar farms in the vicinity.

Photographs and maps on file describe the site and location in detail.

1.4 Pre-Application Consultation

ABP-306229-19: The Board's Notice to the applicants under Section 37B (4) (a) of the Planning and Development Act 2000 (as amended) confirmed that the proposed development would constitute strategic infrastructure. The records of the pre-application meetings were copied to the applicants. The Board's representatives noted that the issue of climate should be fully assessed, a robust justification for large-scale development on the site should be provided, the scenic value of the South Leinster Way and Arrigle Valley should be taken into account, and relevant ecological and environmental constraints should be fully assessed.

1.5 Planning history

1.5.1 Application site:

Reg. Ref. 17/529: PP granted for retention of a telecom structure.

Reg. Ref. 16/1382: PP granted for continuance of use of a telecom structure.

Reg. Ref. 00/593: PP granted for a telecom structure.

1.5.2 Surrounding area:

PL10.208178: PP granted by ABP for Ballymartin Windfarm (3 x turbines) following a 1st Party appeal (minor amendments to height permitted under Reg.Ref.07/2140).

Reg. Ref. 07/2141: PP granted by Council for a windfarm beside Ballymartin Windfarm (3 x turbines).

PL10.206373: PP granted by ABP for Rahora Windfarm (5 x turbines) following a 1st Party appeal (minor amendments to layout permitted under 07/2253).

Reg. Ref. 10/576: PP granted by Council for a windfarm at Tullogher (4 x turbines).

Reg. Ref. 10/103: PP granted by Council for a solar farm at Knocktopher.

Reg. Ref. 16/778: PP granted by Council for a solar farm at Callan.

Reg. Ref. 16/592: PP granted by ABP for a solar farm at Ballyhale/Kiltoran.

Reg. Ref. 19/538: PP granted by Council for battery storage (4 x units) at the previously permitted solar farm at Ballyhale/Kiltoran.

Reg. Ref. 18/573: PP granted by Council for uprate of existing 110kV between the Great Island and Kilkenny substations.

2.0 PROPOSED DEVELOPMENT

2.1 Documentation

The application documentation includes the following:

- Environmental Impact Assessment Report (EIAR)
 - Non-Technical Summary
 - Schedule of Mitigation Measures
- Natura Impact Statement (NIS)
- Planning Drawings
- Photomontages
- Community Consultation Report

The EIAR was supported by Technical Appendices which included:

- Appendix 2.6: Recreation Development Plan
- Appendix 2.7: CEMP
- Appendix 6.1-5: Ecological surveys
- Appendix 6.6: Biodiversity Management Plan
- Appendix 7.1-8: Bird surveys (incl. Collision Risk)
- Appendix 8.2: Peat Stability Risk Assessment
- Appendix 8.3: Soil Stability Assessment
- Appendix 9.1: Flood Risk Assessment
- Appendix 10.1: Shadow Flicker Modelling & Assessment
- Appendix 12.3-7: Noise Modelling & Assessment
- Appendix 13.1-3: Visual impact assessment
- Appendix 14.1: Carbon Calculator
- Appendix 16.1: Road Safety Audit

2.2 Development Description

The proposed windfarm development would comprise:

- 21x wind turbines & hardstands.
- Total generating capacity of between 105 & 126MW.
- 1 x permanent meteorological mast (c.100 high).
- 110kV electrical sub-station & associated infrastructure.
- Grid connection to existing overhead 110kV line at Ballycool (E).
- Upgrade existing access (R704) & provide 2 x new accesses (L7451).
- Upgrade existing & provide new internal access roads.
- Upgrade existing local roads & junctions along haul route.
- 2 x temporary construction compounds & 3 x borrow pits.
- Site drainage & sediment control network.
- Site development & ancillary works.
- Forestry felling & replanting.
- Permanent public recreation area & car park.

A 10-year planning permission and 35-year operational life span is being sought.

2.3 Environmental Impact Assessment Report (EIAR)

The EIAR described the site and surrounding area; stated that the proposal would comply with EU, national and local planning and energy policy; considered alternatives; and provided a detailed project description.

The main body of the EIAR described the receiving environment; outlined the study methodologies; assessed the potential impacts on the receiving environment under the usual range of headings; proposed mitigation measures for the construction, operational and decommissioning phases; identified residual impacts and interactions and assessed cumulative impacts; and had regard to climate change and the risk of major accidents and natural disasters.

The EIAR was informed by a visual impact analysis, several technical appendices and a Non-Technical Summary and Schedule of Mitigation Measures was provided.

The EIAR concluded that environmental impacts, which relate to residential and visual amenity, biodiversity, water quality and aquatic ecology, will be managed by mitigation measures; the proposed development would comply with climate change, renewable energy and planning policy; that it would not adversely affect amenities (residential, visual or heritage) or give rise to a traffic hazard; and that it would be in accordance with the proper planning and sustainable development of the area. The EIAR conclusions were not materially altered by the information contained in the Further Information submission, including the various turbine dimension options.

2.5 Natura Impact Statement

A Stage 1 AA screening exercise was carried out for the proposed windfarm, substation, grid connection and delivery route, and a Stage 2 Natural Impact Statement was prepared.

2.5.1 Stage 1 AA Screening Report

The AA Screening exercise described the site location and the characteristics of the proposed development, and it identified the European sites within the potential Zone of Influence of the project. It assessed the likely effects on several European sites within a 15km radius of the windfarm site. The report described the individual elements of the project with potential to give rise to effects on these European sites and it described any likely direct and indirect effects on the European sites along with in-combination effects, and it assessed the significance of any effects.

This exercise concluded that the proposed windfarm grid connection to the new substation could have likely significant effects, either alone or in-combination with other plans or projects, on the Qualifying Interests and Conservation Objectives of some of the European Sites, and that progression to a Stage 2 Natura Impact Statement was considered necessary for those sites.

2.5.2 The Natura Impact Statement Report

The NIS summarised the background to the report and described the AA methodology. It described the proposed development and the baseline ecology of the site and environs, and it assessed the likely significant effects on 4 x European sites which were screened in after the Stage 1 AA exercise. It identified the potential for direct and indirect effects on these European sites and proposed a range of mitigation measures which are contained in the EIAR. It assessed the potential for cumulative effects in-combination with other plans and projects. The NIS was informed by the Stage 1 AA Screening Report, ecological surveys, relevant EIAR Chapters and the Construction & Environmental Management Plan. (The NIS report also dealt with several European sites located in the vicinity of the proposed forestry replanting areas in other parts of the country, which will be the subject to Forestry Licence assessments and requirements.)

The NIS concluded that, in the light of best scientific knowledge in the field, all aspects of the proposed project which, by itself, or in combination with other plans or projects, which may affect the relevant European Sites have been considered, and that the Board is enabled to ascertain that the proposed project will not adversely affect the integrity of any of the European Sites concerned. The NIS conclusions were not altered by the applicant's response submission to the FI request.

3.0 LEGISLATIVE & POLICY CONTEXT

3.1 National Policy

3.1.1 National Planning Framework Plan, 2018-2040

This plan sets out a strategic national planning framework for the entire country. It recognises the need to move toward a low carbon and climate resilient society, and it emphasizes that rural areas have a strong role to play in securing a sustainable renewable energy supply. It seeks to harness the country's renewable energy potential, achieve a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, and promote new energy systems & transmission grids (including on and off shore wind energy).

3.1.2 National Development Plan, 2021-2030

This plan underpins the NPF Plan, and it sets a framework for investment priorities which includes expenditure commitments to secure a wider range of Strategic Investment Priorities.

3.1.3 National Energy and Climate Plan, 2021-2030

This Plan outlines Ireland's energy and climate policies in detail for the period from 2021 to 2030 and looks onwards to 2050. The NECP is a consolidated plan which brings together energy and climate planning into a single process for the first time. It envisages a target of at least 55% renewable energy in electricity by 2030.

3.1.4 Climate Action Plan, 2021

This Plan seeks to realise a 51% reduction in greenhouse gas emissions by 2030 and substantially increase reliance on renewables by setting us on a path to reach net-zero emissions by no later than 2050, whilst phasing out fossil fuels. Section 11 deals with electricity supply and demand which could be partly met by on-shore wind capacity. Sections 16 and 17 deal with Agriculture, Forestry, Land Use and the marine. The Plan identifies agriculture as a source of carbon emissions and peatlands as having the potential to sequester carbon, and identifies a range of measures to deliver targets for a reduction in greenhouse gas emission.

3.1.5 Wind Energy Development Guidelines - Guidelines for PAs, June 2006.

The Guidelines advise that a reasonable balance must be achieved between meeting Government Policy on renewable energy and the proper planning and sustainable development of an area and it provides advice in relation to the information that should be submitted with planning applications. The impacts on residential amenity, the environment, nature conservation, birds and the landscape should be addressed. It states that particular landscapes of very high sensitivity may not be appropriate for wind energy development.

3.1.6 Draft Wind Energy Development Guidelines, 2019

The Draft Guidelines propose several key amendments to the original document in relation to noise, visual amenity, shadow flicker and community engagement. The application of more stringent noise limits in line with WHO noise standards together with a more robust noise monitoring system and reporting system is proposed. The mandatory minimum 500m setback from houses is retained but augmented by a setback of 4 x turbine height from sensitive receptors.

3.1.7 National Landscape Strategy for Ireland, 2015-2025

This document seeks to integrate landscape into our approach to sustainable development, carry out an evidence-based identification and description of landscape character, provide for an integrated policy framework to protect and manage the landscape and to avoid conflicting policy objectives.

3.1.8 The Planning System and Flood Risk Management, 2009

These Guidelines seeks to avoid inappropriate development in areas at risk of flooding and avoid new developments increasing flood risk elsewhere. They advocate a sequential approach to risk assessment and a justification test.

3.2 Regional Policy

3.2.1 Regional Spatial & Economic Strategy for the Southern Region, 2020

This document seeks to support the delivery of the programme for change set out in Project Ireland 2040, the National Planning Framework (NPF) and the National Development Plan 2018-27 (NDP), and to ensure coordination between the City & County Development Plans and Local Enterprise & Community Plans. It seeks to facilitate the sustainable development of additional electricity generation capacity throughout the region and to support the sustainable expansion of the transmission network. The Regional Authority seeks to ensure that future strategies and plans for the development of renewable energy, and associated infrastructure, will promote the development of renewable energy resources in a sustainable manner. Regional Policy Objectives (RPOs) 87, 95, 96, 98, 99 and 219 deal with renewable energy.

3.3 Other policy documents

- EU Energy Directives and Roadmaps and associated national targets for renewable energy by sector.
- National Renewable Energy Action Plan 2010
- Strategy for Renewable Energy 2012-2020
- EU Guidance (2013) Wind Energy Developments and Natura 2000 Sites.
- Ireland's Transition to a Low Carbon Energy Future, DCENR, 2015-2030
- Renewable Energy Policy and Development Framework. DCENR, 2016

3.4 County Kilkenny Development Plan 2021-2027

3.4.1 Climate change

Aim: To provide a policy framework with objectives and actions in this City and County Development Plan to facilitate the transition to a low carbon and climate resilient County with an emphasis on reduction in energy demand and greenhouse gas emissions, through a combination of effective mitigation and adaptation responses to climate change.

3.4.2 Core Strategy

Aim: To implement the provisions of the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES) and to promote the compact growth of Kilkenny City, Ferrybank/Belview (as part of WMASP), the District Towns, the other settlements in the hierarchy and to strengthen rural economies and communities through growth and development of rural areas

3.4.3 Rural development

Aim: To manage rural change and guide development to strengthen the rural economy and community through the network of towns and villages ensuring vibrant, sustainable and resilient rural areas whilst conserving and sustainably managing our environment and heritage.

Policies & objectives: Chapter 7 contains several policies, objectives and development management standards that seek to protect and promote rural development.

3.4.4 Renewable energy

Aim: To generate 100% of electricity demand for the County through renewables by 2030 by promoting and facilitating all forms of renewable energies and energy efficiency improvements in a sustainable manner as a response to climate change in suitable locations having due regard to natural and built heritage, biodiversity and residential amenities.

Policies & objectives: Chapter 11 contains several policies, objectives and development management standards that seek to promote renewable energy.

Objective 11A: To support and facilitate the provision of energy in accordance with Ireland's transition to a low carbon energy future by means of the maintenance and upgrading of electricity and gas network grid infrastructure and by integrating renewable energy sources and ensuring our national and regional energy system remains safe, secure and ready to meet increased demand as the regional economy grows over the period of the plan.

Ministerial Direction: On 15th October 2021, the Minister of State at the Department of the Housing, Local Government and Heritage, consequent to a recommendation made to him by the Office of the Planning Regulator under section 31AM (8) of the Planning and Development Act 2000 (as amended), notified Kilkenny County Council of his intention to issue a Direction to the Kilkenny City and County Development Plan 2021-2027. In accordance with Section 31(4) of the Planning and Development Act 2000, those parts of the Kilkenny City and County Development Plan 2021-2027 referred to in the notice shall be taken not to have not come into effect, been made or amended; namely, Chapter 11, Renewable Energy: -

- Section 11.4: Kilkenny Targets
- Section 11.5.1: Current status and targets
- Figure 11.4: Wind Strategy areas

3.4.5 Heritage

Aim: To seek the protection and sustainable management of the arts, culture and heritage of Kilkenny for the benefit of current and future generations; to encourage the collection of knowledge to inform its protection; and to promote access to, awareness of and enjoyment of Heritage, Arts & Culture, to further develop the infrastructure and actively support engagement with communities.

Policies & objectives: Chapter 9 contains several policies, objectives and development management standards that seek to protect the landscape, views, biodiversity and cultural heritage.

Landscape & protected views

Landscape Character Assessment: Upland

Landscape Character Area: South-eastern Hills

Landscape sensitivities: Mainly Contours & Ridgelines with some Mixed Forest & Transitional Woodland-shrub in pockets around perimeter

Protected views: NE from Thomastown & Inistioge and SE from Kells River

Recreational Walking Trails: South Leinster Way

Natural heritage

Several SACs, SPAs & p/NHAs within a 15km radius including the River Nore SPA & River Barrow and River Nore SAC to the N and E.

Cultural heritage

Several Recorded Monuments (incl. enclosures & ringforts), sites of archaeological interest, protected structures & NIAH features in the wider area and along the delivery and grid connection routes, including St. Molin's Holy Well to the E.

3.5 Natural Heritage Designations

SACs & SPAs	SACs & SPAs
River Barrow and River Nore SAC	River Nore SPA
Hugginstown Fen SAC	Saltee Islands SPA & SAC
Thomastown Quarry SAC	Lower River Suir SAC
pNHAs	pNHAs
Kilkeasy Bog pNHA	Lough Cullin pNHA
Hugginstown Fen pNHA	Brownstown Wood pNHA
Thomastown pNHA	Kylecorragh Wood pNHA
Inistioge pNHA	Barrow River Estuary pNHA
Rathsnagadan Wood pNHA	Murphy's Of The River pNHA

4.0 SUBMISSIONS AND FURTHER INFORMATION

4.1 Kilkenny County Council

4.1.1 Planning Authority & Elected Members

Chief Executive's Report:

Overview:

- Non-compliance with "Open for Consideration" criteria in Dev. Plan.
- Excessive scale & height relative to receiving landscape.
- Insufficient consideration of residential amenities within 1 to 2km.
- Visual impacts (public domain & heritage).
- Residential amenity impacts.
- Impacts on the natural and built environment.

Interdepartmental reports:

Parks Section:

- Note presence of amenity & heritage sites in the vicinity.
- Analysis of views concludes that views from these locations would not be impacted due to topography & presence of vegetation.
- Viewpoint 6 at Thomastown is quite dramatic on the skyline.
- Note the Landscape Character of the area & future deforestation.
- Plant crop of lower canopy woodland species along site perimeter.
- Acknowledge that it is not possible to screen the turbines from view, although the lower elements will be screened by the existing trees, and placing the turbines along the ridgeline will lessen the visual impact.
- Acknowledge that wind turbines are now a feature of the area which will lessen the visual impact of the proposed turbines on the landscape.
- Upland forestry landscape has capacity to absorb the windfarm.

County Engineer:

- No objection to proposed development.
- Construction impacts include the creation of new & upgraded access off the public road and the use of the road network as a haul route.
- Operation impacts would be minor except for when components need to be replaced, forestry works or increased recreational activities.
- Decommissioning impacts, although difficult to anticipate, would affect the road network, and decommissioning proposals should be agreed.

County Engineer (Road Design):

- No objection to proposed development.
- Concerns raised and conditions recommended.
- Haul route - consent from 3rd party landowners to carry out works.
- Street infrastructure - temporary removal needs to be agreed, Road Safety Audit & compliance with TII required, at Applicant's expense.
- Road surfaces - require a bituminous surface on all locally widened sections of road, works to be agreed in advance & reinstate temporary works to roads, junctions & accesses.
- Licenses, consents & permits - required from relevant authorities.
- Consultation – required with relevant authorities & agencies in relation to road openings, abnormal loads, traffic management etc.
- Access off public road - should be to required standards.
- LS7451- concerned about structural stability of the main construction crossing point and its suitability for large heavy vehicles, undertake FWD analysis 50m each side of the crossing point to determine the strengthening & drainage works required, all agreed works at applicant's expense.
- R704 - undertake FWD analysis of regional road required from the junction with the M9 to the site entrance to determine the strengthening works & drainage required, all agreed works at applicant's expense.
- Photographic survey - required of regional & local roads.
- Applicant must good any construction phase damage at their expense.
- Post construction phase FWD analysis also required.
- LS7451 – operational phase road strengthening required up to R704.

- Grid connection route - road closure license required for LP3418.
- Re-instatement works – should accord with the Purple Book, and existing road drainage should not be affected.
- R407 - vertical alignment works at main construction entrance should accord with TII standards & DMRB, traffic management required along R704 for duration of works, works at applicants' expense.
- Visibility at junctions – advanced junction & stop warning signage required, gates should open in advance of deliveries to avoid queuing.
- Construction & TMP - should be agreed prior to works commencing.
- South Leinster Way - employ measures to facilitate users.
- Amenity car park - no details of layout & link with LS7451).

Assistant Engineer, Callan Division:

- No objection to proposed development.
- Road opening license required & condition recommended.

Environment Section:

- No objection to proposed development.
- Concerns raised and conditions recommended.
- Surface water management - should comply with all requirements, prepare a Surface Water Management Plan, provide for regular water sampling, testing & reporting, and provide for monitoring by an on-site Environmental Manager/Ecologist.
- Waste production – should be minimized and prepare a Waste Management Plan in line with relevant guidance, segregate waste streams, and provide details for the management of waste.
- Tank & drum areas - should be impervious to the material stored.
- Environmental management - should protect the environment & amenities (noise, dust, reflectance, shadow flicker & emissions).
- Wastewater storage – systems should accord with relevant guidance.
- Site Works Plan - required at appropriate stages for construction & decommissioning phases; blasting is not considered to be appropriate or necessary, but if deemed necessary should accord with agreed procedures; confirm suitability of Borrow Pit no.3 & no excavation in Borrow Pits below the winter water table level; undertake an

Environmental Risk Assessment in relation to crushing operations, fine sediments & surface waters; provide location maps and monitoring.

- Vehicle Inspection & Maintenance Plan – required for all 3 x phases.
- Complaint Liaison Officer – should be appointed.
- CEMP & associated documents – should be regularly updated.

General observations:

- House closest to a turbine is not identified.
- Avoid noise impacts during construction & operation.
- Reinforce commitment to zero shadow flicker by condition.
- Adverse impacts on biodiversity (incl. habitat loss).
- Appointed of Ecological Clerk of works should be required by condition.
- Lack of compensatory/mitigation to counteract loss of Woodcock.
- Impact on some views (incl. VP10) would be significant and not moderate & revised layout is required.
- Potential significant cumulative impacts on landscape & visual amenity.
- Require further assessment of impacts on St. Molins Well (KK036-012)

Recommendations:

- Redesign the project
- List of conditions provided.

Elected Members

At a Special Meeting held on 29th March 2021, the Members raised the following issues and agreed the following Resolutions.

Issues:

- Raised a similar range of concerns to CE report
- EIAR omissions (incl. watercourses & gas pipeline).
- Height, scale & size relative to receiving landscape.
- Lack of public engagement & inadequate public consultations.
- Impact on the environment, ecological, heritage, landscape & water.
- Impacts on residential amenity (incl. shadow flicker & noise).

- Disruption during construction phase & adverse impact on roads.
- Silica dust emissions & rock blasting noise.

Resolutions:

- ABP should hold an oral hearing.
- Support Chief Executive's Report & request ABP to reject the project.
- The minimum distance to any turbine to any house should be 2.0km.
- Any rock blasting required should comply with all national & international guidelines.

4.2 Prescribed Bodies

4.2.1 Dept. of Housing, Local Government & Heritage (DAU/NPWS)

- Alternative forestry planting (75ha) includes 1.16ha Annex 1 habitats.
- Tree planting between habitats - fragmentation & degradation.
- Inadequate assessment of aviation lighting on bats & birds.
- Inadequate assessment of impact of amenity area on nesting birds.
- Further information required.

4.2.2 Irish Water

- Three surface water abstraction points noted within 10km.
- Mooncoin Regional Water Supply, Mullinavat not identified or assessed
- No details for discharge destination of dewatered water & treatment.
- Provide info on dewatering & mitigation to protect all water sources.
- Inadequate assessment of tree felling on hydrology & water quality.
- No assessment of likelihood of landslide in Ch.9 or impacts on water.
- Compare surface water samples w Drinking Water Directive standards.
- Inadequate assessment of River Blackwater, drinking water resource.
- Specific mitigation measures required to protect Mooncoin.
- Inadequate assessment of residual impacts on drinking water.
- Require arrangements to monitor & manage residual impacts.
- Further information required.

4.2.3 Transport Infrastructure Ireland

No objection subject to conditions related to:

Haulage Routes:

- Any works to existing junctions on the national road network shall comply with TII standards and be subject to a Road Safety Audit as appropriate.
- Works should ensure the ongoing safety of all road users and safeguard the strategic function of national roads.
- Condition in respect of the above recommended:
 - The applicant/scheme promoter shall consult with the relevant road authorities on any works proposed that affect the national roads and associated junctions in terms of operational requirements such as delivery timetabling, potential costs & associated requirements prior to commencement of any development permitted. Any works, including reinstatement works, to existing junctions on the national road network shall comply with TII standards outlined in TII Publications & shall be subject to Road Safety Audit as appropriate.

Structures:

- Undertake an abnormal road assessment to assess impact of abnormal weight loads on roads.
- Check all affected structures to confirm their capacity to accommodate abnormal weight loads.
- Condition in respect of the above recommended.
 - Prior to the commencement of development, a full assessment of structures on roads of any proposed haul route, shall be undertaken to confirm that the structures can accommodate the proposed loading associated with the delivery of turbine components where the weight of the delivery vehicle and load exceeds that permissible under the Road Traffic Regulations which shall be submitted to the satisfaction of the planning authority.

Licences:

- Works to national roads may require licences and other consents.

4.2.6 Irish Aviation Authority

No objection subject to conditions related to:

- Agree an aeronautical obstacle warning light scheme.
- Provide as constructed coordinates in WGS84 format together with ground and tip height elevations at each turbine location.
- Notify IAA of intention to commence crane operations.

4.3 Public submissions

Some 70 submissions have been received from members of the public (incl. heritage group & local residents).

The main combined concerns raised relate to:

- **EIAR omissions** (incl. watercourses, surface water abstraction points & private wells; proximity to gas pipeline, nearby quarries, & houses; borrow pit & settlement pond dimensions; newts; and road widening & car park access details).
- **Biodiversity** (incl. loss of biodiversity; impacts of aviation lighting on birds & bats, and the amenity area on nesting birds; impacts on on-site badger sett and other species; absence of mitigation for loss of Woodcock habitat & species; seasonal restrictions on vegetation clearance; and impact of replacement forestry on Annex 1 habitats).
- **Water Pollution** (incl. impacts on ground, surface and drinking water quality; tree felling impacts on hydrology & water quality; and impact on Goatsbridge Trout Farm).
- **Flood risk** (incl. effect on Little Arrigle River at Ballyhale).
- **Residential amenity** (incl. visual, noise, infrasound noise, shadow flicker, health, dust, silica dust, private wells, traffic and general disturbance).
- **Local schools** (incl. impacts on Ballyhale national school).
- **Visual** (incl. landscape, protected views, and views from scenic routes, heritage & cultural features).
- **Traffic** (incl. traffic generation & safety along local roads; amenity car park access details; and 3rd party consent to carry out works along haul route).

- **Heritage** (incl. impacts on South Leinster Way, walking routes and St. Molin's Cave & Holy Well; and omission of an on-site medieval road).
- **Carbon savings** (incl. absence of precise details in relation to concrete volumes at turbines & masts from calculations).
- **Other** (incl. inadequate consultations; request oral hearing; non-compliance with Development Plan; inappropriate height, scale & location; landslide risks & stability; clarification of construction phase timescale).
- **Alternatives** (incl. inadequate consideration of reasonable alternatives).
- **Unauthorized works** (incl. on-site works commenced on tracks & drains).

4.4 Further Information Request

The Board requested Further Information in relation to the following matters:

1. **Turbine dimension details:**

Confirm the nature and extent of the development for which permission is sought, by reference to plans and particulars which describe the works to which the application relates, in compliance with the relevant provisions of the Planning and Development Regulations 2001 as amended.

2. **Kilkenny County Council:**

- a. The lack of compensatory/mitigation measures to counteract the loss of Woodcock habitat and species.
- b. The lack of consideration of the visual impact of the view from the E of the wind farm site W towards St. Molin's Holy Well.
- c. The absence of consent from 3rd party landowners (incl. adjacent local authorities) to carry out road works along the haul route.
- d. The absence of layout details and access arrangements to the proposed Amenity Car Park off the local road network.
- e. The omission of a house located in close proximity to a turbine.
- f. The proximity of a gas pipeline to the proposed wind farm site.
- g. The lack of consideration of nearby quarries as a source of aggregate.
- h. The lack of a detailed assessment of silica dust emissions in the EIAR.

3. Irish Water:

- a. The omission of the Mooncoin Regional Water Supply scheme along the River Blackwater at Mullinavat to the SW of the site.
- b. Compliance with current guidelines when assessing Significant Effects on Water Sources.
- c. The lack of detail in relation to any dewatering of the site and surrounds, the discharge destination and level of treatment for any dewatered water, and the need for mitigation measures to protect sources of surface water abstractions.
- d. The need to assess the potential impacts of tree felling on hydrology and water quality, and the need for mitigation measures to protect sources of surface water abstraction.
- e. The lack of assessment of the likelihood of landslides and other natural or man-made disasters, and associated potential impacts on water sources and water quality, and the need for mitigation measures to protect sources of surface water abstraction.
- f. The lack of assessment of surface water sampling compliance with EU Drinking Water Directive standards.
- g. The need to assess potential impacts on the River Blackwater as a drinking water resource which has a high importance as a designated drinking water protected area under the Water Framework Directive, and specific mitigation measures are needed to ensure the protection of the Mooncoin Regional Water Supply and water quality.
- h. The inadequate assessment of residual impacts on sources of surface water abstraction and drinking water quality, and specific arrangements are needed to monitor and manage residual impacts during the construction and operational phases.

4. DAU/NPWS:

- a. The lack of assessment of the potential impacts of turbine aviation lighting on bats and birds.
- b. The lack of assessment of the potential impacts on ground nesting birds related to the proposed windfarm amenity and recreation area.

5. Other:

Provide a response to the remaining concerns raised by the Observers in their written submissions which are not covered under Item nos. 5.2 to 5.4 above.

4.5 Further Information Response

The applicant submitted a detailed response to the request for Further Information which was received by the Board on the 26th day of November 2021. The response submission was accompanied by the following documents:

- Cover Letter
- FI Response report
- Supporting technical appendices:
 - Photomontages & Drawings
 - Shadow Flicker report
 - Noise Technical Note
 - Minutes of consultation meeting with KCC
 - Schedule of Mitigation Measures
 - Confirmation of landowner address details

The FI response also provided turbine and met mast dimension details, and the necessity to amend the EIAR and NIS as a consequence of the information contained in the FI submissions has been reviewed and assessed.

The response addressed the specific concerns raised by Kilkenny County Council, Irish Water and the DAU/NPWS and it provided a grouped format response to the collective concerns raised by members of the public in their written submissions. It also referred to the Climate Action Plan, 2021 and the National Development Plan 2021-2030, which were published after the application was submitted in early 2021.

The main elements of the FI response, which did not give rise to any significant amendments to the project are summarised below.

1. Turbine dimension details

Variable range:

Component	Variation
Tip height	179m to 185m
Hub height	105m to 110.5m
Rotor diameter	149m to 155m

Preferred fixed options:

Tip height	Hub height	Rotor diameter
185m	107.5m	155m
185m	110.5m	149m
179m	105m	155m

Original EIAR & NIS worst case considerations:

Tip height	Hub height	Rotor diameter
185m	110m	155m

- **Met mast:** confirmed as 100m

NIS & EIAR: reviewed & no change to conclusions.

2. Kilkenny County Council

(a) Woodcock:

- a. Further analysis of survey data investigated possible relationships between distribution patterns & habitat parameters, however no patterns emerged and analysis confirmed widespread distribution.
- b. Research programme to provide data on displacement effects on turbines on breeding populations & on-site habitat associations.
- c. Establish a no-shooting sanctuary to reduce over-winter mortality.

(b) St. Molin's Well: photomontages provided of views from the local road above & within Holy Well site, note that it lies to the W of the Arrigle River and downslope of the road with views to the E, and no impacts predicted.

- (c) Third party landowner's consent:** will be sought as & when required.
- (d) Access to amenity car park:** details provided off R704, part of the construction compound will be used & remaining area will be replanted.
- (e) Nearest house:** P148 boundary is 758m & house is 786m SE of T2.
- (f) Gas pipeline:** located to W of windfarm site & passes NE of one of the haul route accommodations works (100m & shallow works); pipeline is over 1km from site boundary, 1.3km from met mast & 1.7km from nearest turbine; Gas Networks Ireland Ltd. satisfied with buffer zones.
- (g) Nearby quarries:** consideration of their use is not a KCC concern.
- (h) Silica dust:** no particularly elevated risks associated with excavations at Borrow Pits, works will be of limited duration.

NIS & EIAR: reviewed & no change to conclusions.

3. Irish Water

(a) Mooncoin Regional Water Supply:

- a.** Main source of abstraction is from the Pollanassa River which is in a separate catchment, it is supplemented as required by pumping from the Blackwater upstream of Mullinavat, whilst the Mullinavat abstraction is c.8km downstream of the project.
- b.** Potential impacts on Mullinavat WTP via down gradient tributaries as a result of construction works are assessed with no additional potential for significant impacts on public water supplies predicted.

(b) Compliance with water quality Guidelines: full compliance confirmed.

(c) Dewatering, discharge destination & treatment: no potential for impacts on the Glenmore, Thomastown/Inistioge, Pollanassa or S Kilkenny water supplies; project will control and treat surface & ground water and discharge at a controlled rate; mitigation measures will not have a significant impact on downgradient streams & Mullinavat WTP.

(d) Tree felling impacts: potential downgradient impacts at sensitive receptors are negligible due to the large separation between the project and local streams & rivers, and the underlying soils & geology; no residual impacts predicted subject to continued implementation of relevant tree felling & forestry guidelines.

(e) Likelihood of landslides: very low based on-site data & lack of peat, located on shallow rock & soils with gentle slopes with low landslide risk.

(f) Compliance with EU drinking water standards: broad water quality baseline was defined for a range of parameters, no exceedance of EU (Drinking Water) Regulations; negligible impacts on existing drinking water quality or sources after mitigation, and monitoring is proposed.

(g) Impacts on River Blackwater drinking water source, WWD, Mooncoin Regional Water Supply & water quality:

- a. WWD requires identification of Drinking Water Protected Areas, and pollution risks to water quality have to be identified.
- b. Although forestry is a significant pressure on water catchments nationally, it is not identified as a risk in the Blackwater catchment.
- c. Downgradient streams classified as Q4 Good Status with no evidence of siltation, surface water management will Accord with SuDS & relevant forestry guidelines (which are WFD aligned).
- d. Mullinavat abstraction point is over 8km downgradient of the site with a total catchment area of c.38.48sq.km., the construction area is 0.4sq.km or 1.05% of the catchment area.
- e. EPA/WFD River Waterbody Approved Risks have not identified the rivers to the W of the site as being “not at risk” of achieving/maintaining good quality status, which is currently Q4.
- f. EIAR mitigation measures are protective of the Blackwater (Kilmacow) River immediately downgradient of the site and are therefore protective of the Mullinavat WTP c.8km downgradient.
- g. Ongoing monitoring indicates that there are no ammonium, dissolved oxygen or turbidity issues in surface runoff from the site.
- h. No significant post mitigation impacts predicted for water quality, aquatic ecology or drinking water sources at the Mullinavat WTP.

(h) Surface water abstraction impacts, mitigation & monitoring:

measures to monitor & manage drainage water will be put in place (separate surface water from construction works & collection/attenuation of construction runoff) & no direct discharge to natural watercourses; ongoing post construction surface water quality monitoring at several locations on the Blackwater & its tributaries will be reported to IW & KCC.

NIS & EIAR: reviewed & no change to conclusions.

4. **DAU/NPWS**

(a) Impacts of aviation lighting on bats & birds:

- a. **Bats:** little information on how bats respond to aviation lighting which is not mentioned in the recent SNH Bats & Onshore Wind Turbines guidelines; US studies found no significant differences in the number of fatalities between lit & unlit turbines; and research has found that aviation lighting does not affect bat activity.
- b. **Birds:** research indicates that burrow nesting seabirds & nocturnally migrating passerines are the most susceptible to increased collision risk; little published evidence to indicate that aviation lighting poses a risk to populations; most of the Key Avian Receptors at this site are not active at night so aviation lighting will not affect collision risks, except for Woodcock & Snipe which fly and/or feed at night but well below aviation lighting heights; monitoring of nocturnal passerine migration is not generally carried out for windfarm projects, and no evidence of high fatality rates to migrant passerine populations at windfarms in EU or US.

(b) Recreational disturbance to birds: the Recreational Development Plan will comprise 13km of trails & associated facilities which could disturb (dogs) ground nesting birds Key Avian Receptors (Woodcock & Snipe).

- a. **Woodcock:** no specific research on recreational impacts & general research on ground nesting birds provides mixed evidence of impacts, but indicate that impacts are lower within plantation forestry; a comparison of Sliabh Bawn windfarm and UK studies indicate that recreational pressure is likely to be low relative to levels of recreational pressure that have been reported to cause impacts on ground nesting birds; site surveys found higher levels of Woodcock in the N part of the site (remnant bog/health) which is beyond the recreational area; a monitoring programme will be implemented which will monitor roding activity

along the trail network and control areas, and if there are difference, dog proof fencing will be provided along the trails.

- b. Snipe:** no specific research on recreational impacts; breeding Snipe habitat is very limited with only one area close enough to potentially be disturbed and dog proof fencing will be installed.

NIS & EIAR: reviewed & no change to conclusions.

5. Observers concerns:

- (a) Planning application/legislation** all relevant legislation/guidance complied with and planning applications referenced.
- (b) Project description/Details:** minor amendments to drawings, typos corrected & clarifications provided.
- (c) Reasonable alternatives:** considered (incl. alternative technologies)
- (d) Policy, planning & development context:** all relevant policies, objectives & standards, and future anticipated guidance complied with.
- (e) Population & human health:** a property near T21 is not inhabited; all sensitive receptors within 1km of site boundary identified; potential impact on local school assessed (c.2.7km) & use of nearest haul route during school hours will be curtailed; no significant impacts from silica dust predicted; no long-term disturbance to local amenity or tourism (incl. S. Leinster Way) & recreational trails will be provided; no evidence to support claims of property devaluation, fire risk, EMF or livestock effects.
- (f) Biodiversity:** some additional survey work undertaken with no change to conclusions, no significant impacts with some positive local impacts.
- (g) Lands soils & geology:** additional site investigation data provided for Borrow Pit no.3; shallow soils & bedrock underlie the turbines with no evidence of peat at any infrastructure locations and any areas of shallow peat has have been avoided; the landslide & stability assessments indicate a negligible risk of instability & a high factor of safety; no evidence of pyrite on the site; no borrow pits located within granite; groundwater will be protected by the drainage management arrangements; no fracking is proposed; greenfield site works would not give rise to metal contamination.

- (h) Hydrology & hydrogeology:** no downgradient wells will be affected; ongoing monitoring; surface water management arrangements will protect against downgradient flooding; and no evidence of landslides or instability with no resultant impacts on water quality predicted.
- (i) Landscape & visual impact:** windfarm is not over-scaled & turbines are not too tall; set-back from nearest houses exceeds WHO Guidelines for turbines (740m) and the current Wind Energy Guidelines (500m); views from along the S Leinster Way have been assessed and impacts considered not to be significant; not practical or necessary to provide seasonal photomontages; and LIVA methodology is robust.
- (j) Shadow flicker:** modelling identified c.70 affected properties under worst case scenario conditions which are unlikely to occur in reality (ex. 100% sunshine) and no properties should be affected for 30 hrs/year or 30 mins/day (2006 Guidelines); commitment to Zero Shadow Flicker will be controlled by in-built technology (Turbine Shutdown); property identification clarified as within 10 x 155m (height); no effect on livestock; and no control over shadow flicker effects at neighbouring windfarms.
- (k) Material assets (telecommunications & aviation):** no permanent impacts that can't be remedied via liaison with community & IAA.
- (l) Air quality & climate:**
- a. Dust:** construction phase impacts have been assessed.
 - b. Carbon calculation:** SNH calculator accounts for a range of factors (incl. carbon losses & savings related to tree felling, transport, concrete & turbine production), the very small peat value use on the model reflects the dearth of peat on the site but does not allow for a "0" input as it was designed for peatland soils.
 - c. Lightning:** turbines & met mast will be fitted with conductor rods.
- (m) Noise & vibration:** AWN conducted a detailed appraisal of noise & vibration impacts, carried out background noise monitoring & modelled impacts in line with current guidelines; clarified that noise characteristic for infrasound & low frequency noise cannot be predicted in noise model at planning stage as the information is not available although it is addressed in the EIAR which now includes a reference to Amplitude

Modulation; claims related to Wind Turbine Syndrome are not supported by scientific evidence; all noise measurement instrumentation was appropriately calibrated; noise impact assessment is robust and accords with current standards & best practice (incl. WHO); very little evidence to support health & sleep loss claims; assessed cumulative impacts at H223 which fall below relevant best practice noise criteria; construction noise (incl. works, blasting & breaking) has been robustly assessed and properties over 750m away will not be disturbed nor heritage features affect by vibration; happy to undertake post commissioning noise monitoring; and minor typos have been corrected & references clarified.

(n) Traffic & transport: an update haul route assessment for abnormal loads will be undertaken prior to construction; appropriate methodology for the removal & replacement of street infrastructure; detailed Stage 2 RSA will be undertaken; consultations took place with KCC & WCC in respect of the haul route & road works, all relevant TII & Council requirements will be complied with; turbine components are abnormal in size but not weigh; and construction phase duration will be 24 months.

(o) Cultural heritage (archaeology):

- a.** St. Molin's Well will not be affected due to its location to the E and downslope of the site; St. Molin's Cave will not be affected due to its location 400m E of any works & 550m E of T6.
- b.** No National Monuments within the site but 6 within 10km (incl. Ballyboodan Ogham Stone & Jerpoint Abbey) and 2 x Recorded Monuments within the site (incl. ringfort).
- c.** The "Medieval Road" is not on any statutory list, it is not a Recorded Monument, and it does not feature on the 1st edition OS map (1832) although it does appear on the 2nd edition (1903).

(p) Community engagement: significant efforts were made to engage with the local community (incl. Community Liaison Officer, door to door calls, website, posters, leaflets, meetings, virtual on-line tours & 22 x site notices); acknowledge difficulties posed by Covid-19 restrictions & poor

internet connections; and the Community Benefit Fund identifies the benefits to the local community.

NIS & EIAR: reviewed & no change to conclusions.

4.6 Further Information - circulation

The information submitted to the Board in response to the FI request addressed the main concerns raised in the request. It did not give rise to any material alterations to the proposed development, it was not deemed to be significant, and it did not need to be advertised or circulated to the parties for further comment.

4.7 Oral hearing

The Board decided not to hold an oral hearing as it considered there was sufficient information contained within the file to allow the Inspector to make an informed recommendation as to whether permission should or should not be granted.

5.0 PLANNING ASSESSMENT

The main planning issues arising in this case are:

1. Compliance with climate change & renewable energy policy
 2. Compliance with planning policy
 3. Carbon balance
 4. Other issues
- Section 6.0 of this report deals with Environmental Impact Assessment.
 - Section 7.0 of this report deals with Appropriate Assessment.

5.1 Compliance with climate change and energy policy

The proposed windfarm would be compatible with European and National climate change and renewable energy policies as summarised in section 3.0 above. It would contribute to the achievement of European and National renewable energy targets, and in particular the objectives of the Climate Action Plan which seek to realise a 51% reduction in greenhouse gas emissions and increase reliance on renewables from by 2030, of which a substantial amount could be met by on-shore windfarms. The Plan also identifies a range of measures to deliver targets for a reduction in greenhouse gas emissions including the better management of peatlands. Compliance with these measures will be addressed in more detail in section 5.3 below in relation to carbon balance, whilst other practical issues related to peatland management (incl. soils, hydrology, biodiversity, peat stability & rehabilitation) will be addressed in the relevant sections of the Environmental Impact Assessment chapter of this report.

5.2 Compliance with planning policy

5.2.1 National planning policy

The proposed windfarm would be compatible with national planning policy as set out in the National Planning Framework Plan, 2018-2040 which recognises the need to

move toward a low carbon and climate resilient society with a sustainable renewable energy supply. The 2006 Wind Energy Development Guidelines (and 2019 Draft amendments) advise that a reasonable balance must be achieved between meeting national policy on renewable energy and the proper planning and sustainable development of an area. The Guidelines also state that projects should not adversely affect any European sites, have an adverse impact on birds, give rise to peat instability or adversely affect drainage patterns, cultural heritage, sensitive landscapes, the local road network or residential amenity. These practical issues will be addressed in more detail in the relevant sections of the Environmental Impact Assessment and Appropriate Assessment chapters of this report.

5.2.2 Regional planning policy

The proposed windfarm would be compatible with regional planning policy as set out in the Regional Spatial and Economic Strategy for the Southern Region, 2020 which seeks to facilitate the sustainable development of additional electricity generation capacity throughout the region and to support the sustainable expansion of the transmission network.

5.2.3 Local planning policy

The proposed windfarm would be compatible with the general climate change and renewable energy aspirations contained in the current Development Plan, which seek to promote sustainable development and measures to reduce energy demand and greenhouse gas emissions, and adapt to climate change. However, there are no specific local planning policies pertaining to renewable energy following a Ministerial Direction dated 15th October 2021. This Directive stated that those parts of the Kilkenny City and County Development Plan 2021-2027 referred to in the notice served on the Council shall be taken not to have not come into effect, been made or amended, namely, Chapter 11, Renewable Energy Section 11.4 Kilkenny Targets, Section 11.5.1 Current status and targets and Figure 11.4 Wind Strategy areas.

Notwithstanding this Direction, the Development Plan continues to contains a plethora of policies and objectives which seek to protect the environment, European

sites, biodiversity, scenic landscapes, views, residential amenity, cultural heritage and the road network. These issues will be addressed in the relevant Environmental Impact Assessment sections and Appropriate Assessment chapters of this report.

5.3 Carbon balance

The Climate Action Plan seeks to realise a 51% reduction in greenhouse gas emissions and substantially increase reliance on renewables by 2030, a large proportion of which could be met by on-shore windfarms. The proposed windfarm development would generate renewable energy which would in turn result in reduced CO₂ emissions to the atmosphere over the lifespan of the project. However, a balance needs to be struck between the carbon emitting construction activities (incl. turbine & concrete production and transport), the loss of any carbon storage capacity in excavated soils (i.e. peatlands), and the generation of renewable energy from non-carbon emitting sources.

The proposed windfarm would be mainly located on non-organic mineral based soils which do not store carbon, and not within a peatland environment, and although there are small pockets of remnant bog/health in the N and S sections of the site, they would not be affected by the proposed works, to any significant extent. The proposed development of 21 x turbines would contribute between c.105 and 126MW to the national grid per year and between c.3,675 and 4,410MW over 35-years. The applicant utilised the SNH carbon calculator (Appendix 14.1) to estimate carbon savings associated with the proposed windfarm which takes account of several variables including turbine manufacture, concrete production, tree felling, replacement forestry and all associated transportation. This would amount to an estimated offset of c.3.6 million tonnes of carbon over 35 years.

The concerns raised by several of the Observers (incl. heritage groups & local residents) in relation to the carbon balance calculations are noted, as is the applicant's response which clarified that despite the absence of peatland soil, a peat value has to be inserted into the SNH calculator as it was devised for peatland soils. Having regard to the carbon balance results, which I consider to be robust, I am satisfied that there would be significant carbon savings over the 35-year lifespan of

the project when balanced against the construction related carbon emissions, in line with national policy and guidelines.

5.4 Other issues

Residential amenity: The proposed development would not overlook, overshadow, or result in a loss of privacy to any nearby houses, and there would be no significant loss of residential amenity. There would be some disturbance during the construction and future decommissioning phases in relation to the works and traffic movements, and there is potential for disturbance during the operational phase in relation to noise, shadow flicker and visual intrusion. Refer to EIA section 6.0 for a more detailed assessment of potential impacts on population and human health, the landscape, traffic, and air and climate.

Visual amenity: Having regard to the scale and location of the proposed development within an elevated rural area and the height of the turbines, the windfarm has the potential to impact the visual amenities of the area in relation to landscape character, protected views and views from scenic routes. Refer to EIA section 6.4 for a more detailed assessment of potential impacts on the landscape.

Movement and access: The proposed development has the potential to impact on the national, regional and local road network during the construction and future decommissioning phases mainly in relation to the delivery and removal of the windfarm components, the delivery of construction materials and worker vehicles. Refer to EIA section 6.5 for a more detailed assessment of potential impacts on the road network.

Flood risk: The proposed development has the potential to affect soil hydrology and surface water flow patterns in the surrounding area during the construction, operational and decommissioning phases. Refer to EIA section 6.8 for a more detailed assessment of potential impacts on the water regime.

Grid connection: The applicant has submitted sufficient information with the planning application, EIAR and NIS to enable the Board to undertake a cumulative impact assessment of any impacts on the environment, and likely significant effects on European sites, of the overall windfarm development in-combination with the grid connection route, other windfarms, and plans or projects in the vicinity.

Environmental services: The sanitary arrangements are considered acceptable.

Forestry: The application was accompanied by a Forestry report and a Forestry Replanting Assessment Report (Technical Appendices 2.4 & 2.5). Tree felling, timber transport and replanting should be carried out in accordance with the terms and conditions of the Forestry Licence requirements.

Amenity Area: The application was accompanied by a Recreational Development Plan (Technical Appendix 2.6) and further details of the car park layout and vehicular access arrangements were provided in the applicant's FI response. The proposed amenity area and loop walks should be provided and managed in accordance Council requirements, and information/interpretative panels should be provided which should include a lease requirement for dogs, in the interest of protecting wildlife from disturbance. This could be addressed by a planning condition.

Suggested conditions: Have been addressed in the relevant sections of the report.

Community benefit: The management of any fund should be agreed with the PA.

Competency: I am satisfied that the EIAR surveys and data analysis have been undertaken by suitably qualified experts in their relevant fields.

Financial contributions and bonds: The standard conditions should be attached.

6.0 ENVIRONMENTAL IMPACT ASSESSMENT

6.1 Introduction

The proposed strategic infrastructure development would comprise the construction of a 21 x turbine windfarm, which would have a generating capacity in excess of 100MW. This EIA considers the environmental information contained in the original EIAR and the information submitted by the applicant in response to the Board's request for the Further Information. This includes the various turbine dimension options which are summarised in section 4.5.1 of this report and replicated below for ease of reference.

Variable range:

<i>Component</i>	<i>Variation</i>
Tip height	179m to 185m
Hub height	105m to 110.5m
Rotor diameter	149m to 155m

Preferred fixed options:

<i>Tip height</i>	<i>Hub height</i>	<i>Rotor diameter</i>
185m	107.5m	155m
185m	110.5m	149m
179m	105m	155m

Original EIAR & NIS worst case considerations:

<i>Tip height</i>	<i>Hub height</i>	<i>Rotor diameter</i>
185m	110m	155m

6.2 Compliance legislative requirements

The application was submitted under Section 37A of the Planning and Development Act 2000 (as amended) and it was accompanied by an EIAR, as required for any application made under this section of the Act. The EIAR is laid out as follows:

- Non-Technical Summary
- Main Statement
- Photomontages
- Technical Appendices

I am satisfied that the information contained in the EIAR complies with article 94 of the Planning and Development Regulations 2000, as amended, and the provisions of Article 5 of the EIA Directive 2014.

I have carried out an examination of the information presented by the applicant, including the EIAR, and the submissions made during the course of the application. A summary of the submissions made by the planning authority, prescribed bodies and observers has been set out at Section 4.0 of this report.

The EIAR describes the proposed development, including information on the site and the project size and design. A description of the main alternatives studied by the developer and alternative locations considered, is provided and the reasons for the preferred choice. The impact of the proposed development was assessed under all the relevant headings with respect to population and human health; noise, shadow flicker, air and climate; biodiversity; landscape; land, geology and soils; hydrology and hydrogeology; roads and traffic; material assets and cultural heritage; and interactions of impacts. Mitigation measures are set in each chapter and summarised in Chapter 18. The content and scope of the EIAR is considered to be acceptable and in compliance with Planning Regulations. No likely significant adverse impacts were identified in the EIAR following mitigation.

The EIA identifies and summarises the likely significant effects of the proposed development on the environment with respect to a number of factors. It identifies the main mitigation measures and residual impacts following mitigation, it assesses cumulative impacts and it reaches a conclusion with respect to each of the factors. The EIA also considers the risks associated with major accidents and/or disasters.

With regard to the requirements of Article 111 of the regulations, I consider that the submissions are generally in accordance with the requirements of Article 94 of the

Planning and Development Regulations 2001, as amended. Cumulative impacts with other plans and projects in the area are not considered likely to be significant.

6.3 Consideration of Reasonable Alternatives

Chapter 3 of the EIAR dealt with the consideration of alternatives. These included the “Do-nothing” Scenario. The main alternatives considered related to location, site layout and design, and alternative processes, which were assessed against key environmental and planning considerations related to the wind resource, grid proximity, planning policy, environmental considerations (incl. landscape, views, site stability, water quality, ecology, birds & heritage), road access, and distance from settlements and dwelling houses. The EIAR concluded that proposed development would represent the best option having regard to the aforementioned considerations.

6.4 Landscape (Visual Impact)

6.4.1 Project description

The proposed development would be located within an undulating and moderately elevated rural area which is mainly characterised by coniferous forestry plantations and agricultural land. The windfarm project would comprise the construction of 21 x turbines, met mast, temporary construction compounds, borrow pits, substation and underground grid connection to an existing 110kV overhead transmission line to the E of the site, along with new and upgraded internal access tracks, and road works and junction upgrades along the haul road network. The turbines would be mainly located on and parallel to the existing ridgelines along a N-S axis in the middle section of the elongated site. The turbines would be relatively evenly distributed throughout the length of the mainly forested area. The substation and met mast would be located in the middle section of the site, and the temporary construction compounds would be located in the N and S sections. The various turbine dimension options are summarised in section 4.5.1 and section 6.1 of this report.

6.4.2 Locational context

The moderately elevated windfarm site occupies an attractive rural location in SE County Kilkenny which is mainly characterised by commercial forestry plantations surrounded by pockets of broad-leafed trees and farmland. There are a number of dispersed houses and farms along the local roads, mainly to the W and E of the site, but also to the N and S. This includes small clusters of several houses and farms to the W of the site at Mountain View, Castlebanny and Ballytarsna.

The c.1434ha elongated site is c. 8-9km long (N/S) and 2-3m wide (W/E), the site levels vary from c.145m to 250mAOD, the lands slope down gently to the E and W, and the windfarm infrastructure would occupy c. 271ha of the overall area. The lands are traversed by a network of watercourses that drain E to the Arrigle and Nore rivers, and W to the Derrylackey, Ballytarsna and Blackwater rivers. There are several elevated areas in the wider area including Mount Brandon to the NE, Tory Hill to the S, the lower foothills of the Blackstairs Mountains and Slieve Coiltia to the

SE. The River Barrow and River Nore SAC and River Nore SPA are located to the N and E of the site whilst the further afield River Suir SAC is located to the S.

The site is located to the SE of Kilkenny City, N of Waterford and W of New Ross. There are several small towns and villages in the immediately surrounding area, including Knocktopher, Ballyhale and Mullinavat to the W, and Thomastown and Inistioge to the N and NE along the River Nore, with the further afield Graiguenamanagh and St. Mullins along the River Barrow to the far E and SE. There are several heritage features in the surrounding area including Jerpoint Abbey, Mount Juliet Estate and Knocktopher Abbey to the NW, and the heritage towns of Thomastown and Inistioge are located to the N and NE. There are several community features and recreational attractions in the wider area including schools, pitches, golf courses and walking routes. The South Leinster Way traverses the S section of the site, and this walking track crosses the River Arrigle Valley to the E, which in turn runs parallel to the Castlebanny Hill range.

The Dublin to Waterford motorway (M9) and railway track are located to the W of the site, and there are 2 small operational windfarms located to the SE and S of the site (Ballymartin & Rahora) along with a number of permitted solar farms in the vicinity.

6.4.3 Environmental Impact Assessment Report

Chapter 13 of the EIAR and associated Technical Appendices dealt with landscape, views and potential visual impacts. Baseline conditions were described and a visibility analysis was undertaken for a 20km radius of the site. The analysis included the establishment of a Zone of Theoretical Visibility (ZTV), Route Screening Analysis and Photomontages, along with a Viewpoint Assessment Summary and a cumulative analysis of existing windfarms. Some 45 x viewpoints were assessed at 38 x sensitive receptors which represented views from Protected Views, heritage sites, community and recreational areas, the main road network, scenic and amenity routes and the wider rural environment, as well as from nearby houses. The FI submissions contained some additional Photomontages.

The EIAR stated that the windfarm has been designed to minimise landscape and visual effects as far as possible. Table 13-7 listed the number of turbine nacelles that would be visible from various Viewshed Reference Points (sensitive receptors and viewpoint locations), ranked the Visual Impact Magnitude at each location as Negligible, Low, Medium and High Medium, and categorised the Significance of Visual Effect as Imperceptible, Slight and Moderate, as summarised below.

- **Slight & Imperceptible** at 33 x Viewpoint locations (VPs 1, 2, 3, 4 (x3), 5 (x3), 6 (x2), 7, 8, 11S, 12, 13, 16, 17, 18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 31, 32, 33, 34 & 35).
- **Moderate- Slight** at 3 x Viewpoint locations (VPs 9, 15, & 19) at Ballyhale, Redacres townland & Tory Hill (Note that 0 turbines would be visible from VP9 at Ballyhale as per Table 13-3, although the Photomontages illustrate some minor visibility).
- **Moderate** at 9 x Viewpoint locations (VPs 6(N), 10, 11N, 14, 25, 30, 36, 37 & 38) at Thomastown (N), Ballytarsna (SW), Mountainview Golf Course (NW), Knockmoylan townland (W), South Leinster Way (SE), a local road near Bawnskeha (N), and along the Arrigle Valley (E).

The EIAR stated that the separation between the Protected Views, heritage features, river corridors and elevated areas, taken in conjunction with the siting and location of the turbines along and adjacent to the ridgelines, the undulating character of the landscape and the presence of forestry screening would ensure that the turbines would not significantly detract from views across the site from any of these locations. This included an area to the W of the site within which a number of community facilities, farms and houses are located, and a scenic area to the E along the Arrigle Valley and local road network.

It concluded that no further significant effects would occur for road users or users of recreational routes in the wider area, that there would be no significant cumulative effects, and that the visual impacts would diminish with distance. The EIAR did not

predict any significant adverse visual impacts on the wider area, either for the windfarm on its own or cumulatively with other windfarms. It also concluded that although the development will give rise to increased landscape, visual and cumulative impacts, the magnitude of the overall effect would be low. The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

6.4.4 Policy context

The 2006 Wind Energy Guidelines recommend that turbines should be set back 500m from the nearest sensitive receptor, whilst the 2019 Draft Guidelines recommend a separation distance of 4 x times the tip height between the closest turbine and the nearest point of the curtilage of the any house, in the interests of visual amenity. The 2006 Guidelines advise that locating the turbines on ridges or plateaus is preferable, as is a regular spacing pattern and staggered linear layout on elongated ridges, and that the intermittent visibility of two or more wind energy developments is usually acceptable.

In relation to the current County Kilkenny Development Plan, the site and environs lie within an extensive Upland Landscape Character Type. The nearest Transition Zone is located c.3km to the NW and the nearest River Valley is located c. 4.5km to the NE, and the Nore Valley is also designated as a Visually Pleasing Area with a Highly Scenic Area beyond. The site and environs lie within 4 x Landscape Character Areas (LCAs). The windfarm site lies within the South Western Hills LCA (C) which adjoins the South Eastern Hills LCA (E) to the immediate E, whilst the Kilkenny Eastern Basin LCA (F3) and the South Western Hills LCA (C2) lie to the far N and S. The Castlebanny Hills are characterised by 4 x main ridges that mainly run along an N-S axis, and the higher points afford views over the Rivers Suir, Nore and Barrow. There are 3 x Protected Views (V5, V6 & V20) towards the Castlebanny Hills and windfarm site from the NW and NE, including one from outside Thomastown (V6) across the River Nore c.7km to the NE. The Kilkenny Development Plan also contains several policies and objectives which seek to protect and manage the landscape and views.

In relation to the neighbouring counties (incl. Carlow, Wexford, Waterford & Tipperary), there are several sensitive LCAs, elevated locations, scenic routes, protected views, river valleys and heritage features located within a 30km radius of the windfarm site (incl. Mount Brandon, Tory Hill, the foothills of the Blackstairs Mountains, Slieve Coiltia, River Barrow, Graiguenamanagh & St. Mullins) and the respective Development Plans contain a similar range of policies and objectives to protect and manage landscapes and views.

6.4.5 Assessment

I surveyed the wind farm site, the surrounding area and the wider regional and local road network in County Kilkenny and the neighbouring counties over a combined 3-day period in June 2021 and May 2022. I had regard to the EIAR visual impact studies which are summarised in section 6.4.3 above. I also had regard to the concerns raised by the Observers (incl. KCC, Save The South Leinster Way Group, heritage groups & local residents) which are summarised in section 4.0 above, and the applicant's response to these concerns in the Further Information submission which is summarised in section 4.5. Their concerns related to the height and scale of the turbines relative to the surrounding rural area, the accuracy of the visual impact assessment, and impacts on the landscape, views and visual amenity. I also had regard to relevant national, regional and local planning policy, which is summarised in Section 3.0, and the various turbine dimension options which are summarised in section 4.5.1 and section 6.1 of this report.

Receiving landscape:

Wind turbines, by virtue of their height and scale, will undoubtedly have an impact on the receiving landscape. The proposed windfarm would not be located within a designated sensitive landscape although there some sensitive and high-quality landscapes located to the E of the site along and beyond the Nore Valley, and 3 x Protected Views towards the site from the NW and NE. The proposed turbines would be dispersed in an orderly fashion throughout the elongated site to take account of the topographical features of the landscape, and they would be located mainly along or adjacent to the natural ridgelines of the Castlebanny Hills. The layout would

comprise two parallel rows of turbines along the N-S axis with an average separation distance of c.800m between each pair, and most would be located to the N of the South Leinster Way which traverse the S section of the site. The proposed layout of the turbines would accord with the recommendations contained in the 2006 Guidelines in relation to elevated and undulating landscapes, with regard to the position of the structures along or adjacent to ridgelines, the orderly layout and the regular spacing between the turbines. The proposed layout (incl. the various turbine dimension options as per the FI response) is therefore considered to be acceptable in terms of visual amenity and landscape character.

Protected views:

There are 3 x Protected Views towards the site from the NW and NE (V5, V6 & V20) from Inistioge Bridge, S of Thomastown across the Nore Valley, and Kings River outside Kilkenny City. The turbines would not be visible when viewed from V5 and V20 because of the separation distance and/or the undulating nature of the intervening landscape. Although the upper sections of some of the turbines would be visible when viewed from V6 outside of Thomastown when travelling S along the local road towards Inistioge, the visual impact would not be dominant with no significant adverse impact on this Protected View anticipated, having regard to the the undulating and forested character of the intervening landscape.

Heritage sites:

There are several heritage sites located within 5km of the NW site boundary (incl. Jerpoint Abbey, Knocktopher Abbey & Mount Juliet Estate) along with some heritage towns c. 7km to the N and NE of the NE site boundary (incl. Thomastown & Inistioge), and St. Molins Holy Well to the E. Although there would be intermittent views of some of the turbines (nacelle and/or blades) from these locations, the overall impact on the surrounding landscape and on visual amenity would not be significant. As previously stated, the visual impact of the turbines would decrease with distance, and having regard to the undulating character of the surrounding landscape and the level of forestry screening, I am satisfied that any impacts on intermittent views towards the windfarm site from these and further afield heritage areas (incl. Graiguenamanagh & St. Mullins) would be negligible.

Built-up areas:

The proposed windfarm would be located within a moderately elevated rural area that is at a remove from densely built-up areas. However, there are several small towns and villages located within c.5km of the W site boundary (incl. Knocktopher, Ballyhale & Mullinavat) and within 7km of the N and NE site boundary (incl. Thomastown & Inistioge). Although there would be intermittent views of some of the turbines from these locations and also from along the surrounding road network as demonstrated in the applicant's Route Screening Analysis (RSA), the overall impact on the surrounding landscape when viewed from these locations, and on visual amenity would not be significant. Furthermore, the visual impact of the turbines would decrease with distance. And having regard to the undulating character of the surrounding landscape and the level of forestry screening, I am satisfied that any impacts on intermittent views towards the windfarm site from further afield towns and villages (incl. Bennettsbridge, Graiguenamanagh, New Ross & Waterford) would be negligible.

Dwelling houses:

The settlement pattern for dwelling houses along the surrounding local road network to the N, S, E and W of the site is mainly dispersed and low density. However, the residential densities are slightly higher along the local roads to the W of the site, and there are three small clusters of several houses at Mountain View, Castlebanny and Ballytarsna. Although there will be intermittent views of the turbines from these locations and also sporadically from along the local roads to the W, N and S, I am satisfied that the turbines will not be overly dominant, and they will not adversely impact visual amenity to any significant extent.

Notwithstanding this general conclusion, there are several houses in the environs of the windfarm that are within 1km from the nearest turbines, including a small cluster at Ballytarsna (T5, T7 & T9). The applicant's FI submission also confirmed that the nearest house to the windfarm is located at P148 to the SE where the property boundary and dwelling are within c.758m and c.786m respectively of T2. Although the undulating nature and afforested character of the surrounding landscape would provide some degree of natural screening, there is potential for some of the turbines to be highly visible from these residential locations.

However, the separation distance between the houses and the nearest turbines would exceed the 2006 Guideline of 500m and the Draft 2019 Guideline of 740m (4 x 185m max tip height). Having regard to European and National policy in relation to renewable energy and to the exceedance of minimum separation guidelines, on balance, I am satisfied that the proposed windfarm is acceptable at this location and that dominant views of the turbines from Ballytarsna and any other nearby houses would not constitute a reason to refuse permission of alter the turbine layout.

Although there will be intermittent views of the turbines from several locations to the N, S and E of the site, I am satisfied that the turbines will not be overly dominant, and they will not adversely impact visual amenity to any significant extent.

Recreational, tourist & scenic areas:

Some of the turbines would be visible from along a number of recreational, tourist and scenic areas (incl. walking trails, cycling routes, playing pitches & golf courses). However, the overall visual impact would not be significant having regard to the intervening undulating topography of the area which would only afford intermittent views of the turbines, and the separation distances which would serve to moderate the visual impacts on many of the views towards the site. Although some of the upper sections of the turbines would be highly visible from within Mountainview Golf Course to the NW, the scale of the visual impact would not warrant either a refusal of planning permission or an alteration to the turbine layout.

Notwithstanding this general conclusion, the South Leinster Way traverses the S section of the windfarm site and all except one of the turbines (T1) would be located to the N of this walking trail. Although the construction works would interfere with the public's use of this trail, the impact would be short term and temporary. The proposed Recreational Management Plan would provide for a network of looped walking routes through the windfarm site which would make a positive contribution to the amenity value of the South Leinster Way. Although the turbines located in the S section of the site would be intermittently visible along this walking trail to the SW and NE (VPs 25 & 27), there is no empirical evidence to confirm that windfarms have negative impacts on recreation and tourism, whilst some studies indicate a net positive impact.

The South Leinster Way continues E after leaving the site and it crosses the scenic Arrigle Valley which runs parallel to the Castlebanny Hills, and the trail extends along an elevated section of the local road network to the E of the Valley before rising again, enroute to Mount Brandon in the far NE. There are clear and largely uninterrupted views of the Castlebanny Hills and windfarm site across the Arrigle Valley from along these local roads, and at their intersections with the South Leinster Way (VPs 36, 27 & 38) with St. Molin's Holy Well in the foreground (VP36). Some of the turbines would be highly visible from along these roads. However, there are no designated scenic routes along the Arrigle Valley or protected views towards the Castlebanny Hills. Having regard to European and National policy in relation to renewable energy and to the absence of any scenic or protected view designations, on balance, I am satisfied that the proposed windfarm is acceptable and that dominant views of the turbines from along the Arrigle Valley and South Leinster Way would not constitute a reason to refuse permission of alter the layout of the turbines.

Other nearby views:

The turbines would be intermittently visible from along the surrounding local road network (incl. the M9, regional & local roads) as noted in the applicant's Route Screening Analysis report and observed during my site inspections. None of these views are protected. Although the upper sections of several of the turbines (nacelle and/or blades) would be intermittently visible, there would be no significant adverse visual impacts on the surrounding landscape.

Long distance Views:

There would be some long-distance views towards the proposed windfarm from the outer perimeter of the 20km radius to the N, S, E and W (incl. Mount Brandon to the NE & Tory Hill to the S). The visual impacts of the turbines when viewed from these locations would range from non-existent, through to Negligible and Low, with no significant visual impacts on the landscape or views anticipated, having regard to the extent of the substantial separation distances, the undulating character of the intervening landscape, and the level of natural screening.

Cumulative impacts:

The EIAR Viewpoint Assessment also deals with the potential for in-combination effects with two other smaller operational windfarms to the S and SE of the site, off the R704. Several of the proposed and operational turbines would be visible from various locations within the surrounding area, and from several further afield elevated locations which would extend to the outer perimeter of the 20km Study Area. No significant adverse cumulative impacts are anticipated for short distance views towards the windfarm site, and although the turbines would be slightly visible from further afield elevated areas, they would not form a dominant feature because of the separation distance and intervening undulating landscape. Although there is some potential for in-combination effects, they are not expected to be significant with no adverse cumulative impacts anticipated.

Conclusion:

Overall, on balance, the proposed development would not be unduly visually intrusive having regard to the undulating character of the intervening landscape, level of forestry coverage, the separation distances between the viewpoint locations and the windfarm site, and also the distance between the proposed and existing windfarm developments. Therefore, the proposed turbines would not constitute an unacceptable dominant feature on the landscape or interfere with long distance views towards and across the site, with no significant in-combination visual impacts anticipated.

6.4.7 Conclusions:

Residual Effects: Residual impacts are not predicted to be significant.

Cumulative Impacts: Any cumulative Landscape impacts during the operational phase when taken in-combination with other windfarms, plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered all the written submissions made in relation to the landscape and visual amenity, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion: Having regard to all of the above, I am satisfied that the most significant visual impacts would be from within the site itself and its immediate environs, intermittently from along the surrounding local road network and from several dispersed houses or clusters that are mainly located to the W of the site at Mountain View, Castlebanny and Ballytarsna, and from the local roads that run parallel to the Arrigle Valley to the E of the site. There would also be minor intermittent views from some heritage sites, towns, villages and recreational areas, mainly to the N, NW and NE of the site. The proposed development would not adversely affect the visual amenities of the area or interfere with any protected views to any significant extent. The proposed development would not give rise to any significant adverse cumulative impacts with other windfarms in the wider area. The height and rotor blade dimensions of the proposed turbines (under the various turbine dimension options as per the FI submission which are summarised in sections 4.5.1 & 6.1 of this report).

6.5 Material Assets (Movement and access)

6.5.1 Project description and location

The proposed windfarm would be located to the SE of Kilkenny City with indirect access off the M9 between Kilkenny and Waterford via Exit 11 at Mullinavat and along the regional and local road network (R704 & L7451). The project comprises the construction of a 21 x turbine windfarm and all associated infrastructure. The potential movement impacts relate to the removal of felled timber from the site and the delivery of construction materials and turbine components to the site along the national, regional and local road network, and the subsequent removal of turbine components during the future decommissioning phase. The various turbine dimension options are summarised in sections 4.5.1 and 6.1 above.

The main infrastructure elements include:

- Minor road & junction works long haul routes (N29, N25, N9, M9 & R704).
- Upgrade of main forestry site access off R704 to improve visibility.
- New crossing point on L7451, c.1.8 N of junction with R704.
- Upgrade existing internal access tracks (c.11km).
- Provide new internal access tracks (c.11km).

6.5.2 Environmental Impact Assessment Report

Chapter 16 of the EIAR and associated Technical Appendices dealt with the traffic and transport effects of the proposed windfarm on the road network during the construction, operational and future decommissioning phases. Various traffic studies, Road Safety Audits and Turbine Delivery Route assessments were undertaken, and a Traffic Management Plan will be prepared. The turbine delivery route from Waterford Port to the S would be along the N25 Waterford Bypass, M9 Waterford to Kilkenny motorway, and the along the R704 regional road to a new crossing/junction with the L7451 local road at an existing upgraded site entrance. The timber removal and construction materials delivery routes would be similar to the turbine delivery route, although a wider network of local roads would be used for materials delivery.

The EIAR described the characteristics of the road network (incl. road width, alignment, junctions, bridges & speed limits), delivery vehicle specifications required to transport the abnormally large components (c.75m long blade length), and it identified c.12 pinch points along the route that require remedial works. It also identified a number of sensitive receptors along the haul route (incl. community facilities, dwelling houses & heritage features). The EIAR carried out traffic counts along the road network which were used to describe existing traffic volumes, assess the impact of traffic generation and the capacity of the road network to accommodate abnormally large vehicles. It highlighted the extent of the remedial works required along the haul route and at the main site access off the R704 to improve visibility. It noted that the grid connection cabling works will have localised impacts on the road network for c.5 days (L7451, L8276 & L3418).

During the c.24-month construction phase, a substantial number of loads will be delivered to and from the site, with the peak daily deliveries occurring between M3 and M14 (c.204 to 252 per day both ways). Concrete deliveries account for the bulk of the movements during this period (c.94 loads per day), followed by aggregate (c.7/day) and turbine deliveries (3/day). The use of 3 x on-site borrow pits and the utilisation of c.11km of existing forestry tracks will reduce aggregate importation to the site by an estimated 66%. Peak deliveries will occur when the concrete foundations are poured, with isolated peaks of c.21 days over the 2- year construction phase. Staff movements are estimated to be c.50/day on average.

HGV traffic volumes are predicted to reduce capacity on the national road network by c.1% and link capacity on the R704 by c.2.1% on average and by c.6.8% at peak, that still leaves a spare link capacity of c.63.8%, which will give rise to a marginal reduction in capacity, neither of which is predicted to be significant. The traffic impacts on the regional and local road network are expected to be negative but short term during the construction phase. The works at the site entrances and the new crossing over the L7451 are predicted to have a negligible effect on traffic volumes. The EIAR concluded that the road network has sufficient spare capacity to accommodate the anticipated increase in traffic volumes during the construction phase. During the operational phase the increase in traffic will be limited to a small number of visiting maintenance employees. It is anticipated that the future

decommissioning impacts on the road network will be less significant than during the construction phase impacts as they will not include the delivery of concrete and construction materials to the site.

The EIAR concluded that only short-term temporary impacts during the construction phase are predicted and that the mitigation measures (incl. a Traffic Management Plan, liaison with the County Council, Gardaí & local communities, a Haul Route Survey for abnormal loads & temporary traffic signs) will minimise the impacts on the road network during each phase. The EIAR did not predict any cumulative impacts in combination with other operational windfarms or other project in the surrounding area, or any other significant adverse impacts during the operational or future decommissioning phases. The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

6.5.3 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area and the wider road network in County Kilkenny over a 3-day period in July 2020 and May 2022. I had regard to the relevant EIAR traffic and movement studies which are summarised in section 6.5.2 above and the concerns raised by the Observers (TII, KCC & several local residents) which are summarised in section 4.0 above, and the applicant's response to these concerns in the Further Information submission which is summarised in section 4.5 above. Their concerns related to general disturbance, traffic safety and road capacity. I also had regard to relevant national, regional and local transportation and planning policy, which is summarised in section 3.0, and the various turbine dimension options contained in the FI response which are summarised in sections 4.5.1 and 6.1 of this report. Transport Infrastructure Ireland and the County Council had no objections to the proposed arrangements subject to compliance with national and local policy, guidance and standards in relation to traffic safety and road maintenance.

Vehicular access:

Vehicular access to the proposed development during the construction phase would be off the R704 at a point to the SE of the site and via an existing internal forestry access road that intercepts with the L7451 c.1.8km N of the junction of the L7514 with the R704 to the W. A new crossroad junction would be provided at this location. This would be a short-term temporary arrangement during the construction phase only and any adverse impacts would be correspondingly short term and temporary. Any traffic risks associated with the use of this section of the road network and any upgrade of the infrastructure would be managed by the EIAR mitigation measures which are outlined above, and subject to compliance with Council requirements as specified in the Council's submission and addressed by the applicant in the FI response submissions, which are also summarised above (Refer to sections 4.4 & 4.5 above). These measures include a traffic management plan and temporary traffic controls which should be put in place for the duration of the works with the agreement of the County Council. Vehicular access to the operational windfarm and proposed recreation area and associated car park would be directly off the L7451.

The surrounding local road network has adequate spare capacity to accommodate the anticipated increase in traffic, and no significant impacts on traffic volumes or road safety are anticipated during any of the phases (construction, operational or future decommissioning). I am satisfied that the vehicular access arrangements would not give rise to a traffic hazard or endanger the safety of other road users. Notwithstanding the above, any maintenance works to the public road arising from the proposed development should be at the developer's expense.

Delivery route:

The proposed use of the M9 from Waterford Port via R704 to the site is an acceptable delivery route for the turbine components and construction materials. However, some works may be required along these roads and at their junctions to accommodate the abnormally wide and heavy loads which could also have a physical impact on the road network and cause disturbance to local communities during the construction and decommissioning phases.

TII referenced the strategic importance of the national road network, had no objection in principle to the proposed delivery route, but raised concerns in relation to road maintenance and traffic safety and requested that the developer consult with the Roads Authority in relation to any works that may affect the road network and road junctions. TII also requested that all works should comply with TII standards and be subject to a Road Safety Audit as appropriate, and that permits may be required for abnormal or heavy loads. The capacity of all structures along the delivery route should also be checked and a technical load assessment is required. The County Council did not object to the proposed arrangements which should comply with all council roads requirements. Any works to the road network and junctions should be at the developer's expense following completion of the project. These outstanding concerns could be addressed way a planning condition which requires compliance with TII and KCC requirements.

Potential adverse impacts to the road network would be mainly managed by way of the EIAR mitigation measures which are outlined above, and which include a CEMP and Traffic Management Plan, and a range of temporary traffic control measures which should be put in place with the agreement of the County Council. It is also noted that abnormally large or wide loads would be delivered when traffic volumes are low with no significant impacts on traffic volumes or road safety anticipated. The use of the road network also has potential to cause disturbance to local communities along the delivery route and the developer should ensure that local people are notified in advance of any plans to transport large loads to the site. Any street infrastructure affected along the delivery route would be replaced post construction.

I am satisfied that the proposed delivery arrangements would not give rise to a traffic hazard or endanger the safety of other road users and that any disturbance to local communities along the route would be short term and temporary in nature. However, temporary traffic management measures should be put in place for the entire duration of the works in order to avoid a traffic hazard along the M9 and local road network, and during the delivery stage of the project along the R704.

Site access & internal access tracks:

The proposed development would utilise and upgrade the existing site entrance, which is considered acceptable subject to compliance with County Council requirements in relation to visibility and traffic safety. It would also utilise, upgrade and extend the existing network of internal tracks to provide access to and between the proposed turbines and other project elements which is also considered acceptable. Issues related to site stability, water quality and ecology will be addressed in the following sections of this report.

6.5.5 Conclusions:

Residual Effects: There will be a short-term increase in traffic movements during the construction and future decommissioning phases but no significant increase during the operational phase. Residual impacts are not predicted to be significant.

Cumulative Impacts: Any cumulative traffic impacts during the operational phase when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered all the written submissions made in relation to movement and access, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion: Having regard to all of the above, I am satisfied that the proposed development (incl. various turbine dimension options which are summarised in sections 4.5.1 & 6.1 above) would not give rise to a traffic hazard or endanger the safety of other road users, subject to the full implementation of the EIAR mitigation measures and compliance with any recommended planning conditions. The proposed development would not give rise to any significant adverse cumulative traffic impacts in-combination with other windfarms, the grid connection route or plans and projects in the area.

6.6 Population, Human Health, Air & Climate

6.6.1 Project description:

The project would comprise the construction of 21 x turbine windfarm and associated infrastructure including a met mast, substation and temporary construction compounds along with borrow pits, new and upgraded access tracks, underground cabling & associated site works. The visual impacts have been assessed in section 6.4 above and the traffic impacts have been assessed in section 6.5. This section will deal the potential impacts of noise, shadow flicker, dust and visual intrusion on the residential amenities of properties in the vicinity with respect to human beings, population and human health. The various turbine dimension options are summarised in sections 4.5.1 and 6.1 above.

6.6.2 Locational context

As previously stated, the windfarm site occupies a moderately elevated rural location to the SE of Kilkenny City and to the E of the M9 which connects Kilkenny and Waterford. The site and environs are mainly characterised by forestry plantations and agricultural fields. The surrounding rural area is sparsely populated although there are several detached houses and farm buildings houses located along the surrounding local road network to the N, S, E and W of the site, with the highest density of housing to the W at Mountain View, Castlebanny and Ballytarsna. There are houses and community buildings along the turbine delivery route from Waterford Port to the S and E of the site, and along the materials haul routes to the N of the site, with increasing residential densities on the approach roads to towns and village.

6.6.3 Environmental Impact Assessment Report

Chapters 5, 10, 11, 12, 13, 14, & 16 of the EIAR and associated Technical Appendices dealt with the human environment including population & human health (economic activity, tourism & employment), visual amenity, noise, material assets (shadow flicker and air & climate) and traffic & transport. These chapters identified the potential impacts on residential amenity and the wider human population during the construction, operational and future decommissioning phases.

Section 5 of the EIAR dealt with **population and human health**. It described the population, employment, economic activity, land uses, services, and tourist attractions in the surrounding area; it referred to surveys of public perceptions of windfarms which dealt with the impacts of wind farms on visual amenity, tourism, employment and health; and it stated that there would be positive health effects related to a reduction in the use of fossil fuels to generate energy. The EIAR identified c.128 sensitive receptors (incl. c.122 houses) within a c.1 to 2km radius of the proposed windfarm, and noted that the nearest sensitive receptor is in excess of 750m from the turbine locations. The nearest urban settlements are located between c.2km and 6km to the NW, SW and NE of the windfarm (Ballyhale, Inistioge & Mullinavat). The EIAR concluded that following the implementation of mitigation measures (related to noise, shadow flicker & traffic) and the use of best construction practices and ongoing monitoring, and the physical characteristics of the surrounding forested area, the proposed windfarm would not result in any significant effects on human beings in the surrounding area.

Section 14 of the EIAR and Technical Appendices dealt with **air quality and climate**. It stated that there would be no emissions from the wind farm development, and given the nature of the project, there would be no adverse long-term impacts on air quality. It stated that there could be short-term impacts by way of dust during the construction phase with regard to delivery vehicles, excavations and construction, but noted that the nearest dwellings are over 750m away. There would be no loss of carbon storage capacity as the site is not characterised by peatland soils, and the renewable energy project would result in the offset of c.3.6 million tonnes of carbon over its 35-year operational lifespan. The EIAR did not predict any adverse impacts on air and climate subject to mitigation measures (incl. maintenance of construction vehicles & best construction practice).

Section 10 of the EIAR and Technical Appendices (incl. Appendix 10.1) dealt with **shadow flicker**. The computer modelling examined the potential for shadow flicker occurrence at 83 x sensitive properties located within 1.55km (10 x rotor diameter of 155m as per 2006 Guidelines) of the nearest turbines, mainly to the E and W of the site. The assessment concluded that at c.56 of the properties, there is potential for

shadow flicker to exceed the 2006 Guideline of 30 minutes per day, and that at c.70 properties there is potential for shadow flicker to exceed 30 hours per year, under the worst-case scenario of 100% sunshine where the shadow of the turbine passes over the structure. It stated that this would be an extremely rare occurrence and when reduction factors are factored into the model, there would be no exceedance of current guidelines. The applicant's Further Information submission confirmed these conclusions by way of a further study and clarified that the analysis related to worst-case conditions for a maximum rotor blade diameter of 155m, and that there would be no material change to the EIAR conclusions under the various turbine dimension options (as summarised in sections 4.5.1 & 6.1 above). The EIAR did not predict any adverse shadow flicker impacts subject to mitigation measures (incl. monitoring, logging complaints & the use of a turbine control/shutdown system to prevent operation at times when shadow flicker might cause a disturbance).

Section 12 of the EIAR and Technical Appendices, and the Further Information response dealt with **noise and vibration**, and it concluded that there would be minimal disturbance from construction and operational noise (incl. borrow pit excavations, turbines, access tracks & substation) at the nearest noise sensitive locations. The assessment included desktop and field studies and had regard to existing 2006 Guidelines. The EIAR identified c.181 noise sensitive locations (mainly houses) located within a 2km radius of the windfarm, which are mainly located to the E and W of the site. It excluded two properties within 175m and 345m of T21 due to being unhabituated or involved with the project (P56 & P57), and it identified the nearest sensitive property at c.785m from T1 (P151). It carried out a Baseline Noise Survey and constructed a (small scale) Noise Contour Map (Appendix 12.6), noise monitoring surveys were undertaken at several sensitive locations (P25, 45, 20, 68, 74, 80, 99 & 147), and a construction noise model for the borrow pits was prepared (incl. blasting & rock breaking). Background measurements were recorded, and a variety of wind speeds and wind shear formed part of the (indicative) prediction model for day and night time noise during the operational phase, and cumulative impacts with neighbouring windfarms were assessed. The applicant's FI submission subsequently confirmed that the nearest house to the windfarm is located at P148 to the SE where the property boundary and dwelling are within c.758m and c.786m respectively of T2.

The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

Construction phase:

Typical construction noise levels were predicted at the nearest noise sensitive locations. The noise levels for general turbine construction at the closest sensitive receptor (P151) within c.785m of T1, ranged from 29 to 42dBLAeqT, with a worst-case cumulative level of c.45dBLAeqT. In all cases the predicted noise levels at the nearest noise sensitive locations are below 65 dBLAeqT during daytime periods, with noise levels reducing with increasing separation distance. The predicted noise levels for timber felling and access track construction at the closest sensitive receptor (P148) within c.250m of the works, ranged from 43 to 52dBLAeqT, reducing to between 33 to 42dBLAeqT at 700m. The EIAR did not predict any vibration impacts. The 3 x borrow pits would be located in excess of 700m from the nearest properties. Predicted construction noise levels at the nearest Noise Sensitive Locations (P148, 150, 147, 149, 013 & 146) ranged from 30 to 37dB(A) for blasting operations, and from 43 to 50dB(A) for rock breaking operations, although individual blast events will be audible at some locations. Air Overpressure and Ground Vibration from blasting has not been predicted in the EIAR but will be managed by careful blast design. The predicted noise levels for substation construction at the closest sensitive receptor (P079) within c.1.2km of the works would be c. 38BLAeqT. The predicted noise levels for grid connection construction at the closest sensitive receptors along the route within c.15m of the works would be c. 76dBLAeqT, which exceeds the 65BLAeqT threshold and mitigation is proposed. The EIAR did not predict any adverse noise or vibration impacts during the construction phase subject to mitigation measures (incl. best construction practice & adherence to relevant guidance & standards).

Operational Phase:

Operational noise levels were predicted at 181 x noise sensitive locations (mainly houses) surrounding the site, based on the lowest background noise levels measures at several Noise Sensitive Locations (incl. P148, 150, 147, 149, 013 & 146). A noise contour for standard mode operation rated at 9m/s wind speed was

applied (highest cumulative standard & worst-case scenario). No exceedance of noise levels at this wind speed was predicted for properties in the immediately surrounding area. An exceedance of daytime noise levels was identified at 6 x sensitive receptors at certain windspeeds to the S of the proposed and existing operational windfarms (P217 to P222), and night-time noise level would be exceeded at 2 of these locations (P219 & P220), however the proposed noise levels would be more than 10dB below the neighbouring windfarm levels. A 0.1dB exceedance of noise levels at a windspeed of 8m/sec is predicted at 1 of the 181 properties in the surrounding area (P079). The EIAR predicted that noise levels would not exceed the accepted criteria for day and night time noise to any significant extent, in line with current guidance, with no noticeable in-combination effects identified at any of the properties over various wind speeds.

The EIAR did not predict any significant adverse noise impacts under a range of wind speeds during the operational phase with no mitigation measures proposed, however, noise monitoring will be undertaken, and a turbine curtailment strategy will be devised in the event that noise limits are exceeded.

The EIAR carried out a literature review of articles related to infrasound, low frequency and noise amplitude modulation and noted that several worldwide health studies concluded that concerns were not supported by scientific evidence.

6.6.3 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area in County Kilkenny over a 3-day period in June 2020 and May 2022. I had regard to the relevant EIAR shadow flicker, air quality and noise studies which are summarised in section 6.6.2 above. I had regard to the concerns raised by the Observers which are summarised in sections 4.0 (incl. several local residents & schools) who raised concerns about residential amenity (incl. noise, shadow flicker & visual intrusion), construction traffic impacts, and the protection of TV, mobile phone and internet connectivity. I then had regard to the applicant's response to the Further Information submission, which is summarised in sections 4.5 above, and in particular the turbine dimension details which are summarised in sections 5.4.1 and 6.1 above, along with

the applicant's confirmation that the FI response would not give rise to any significant alterations to the EIAR conclusions.

I also had regard to relevant national, regional and local planning policy, which is summarised in section 3.0, and to the presence of two operational windfarms to the S and SE of the site the site.

The proposed windfarm will provide significant employment opportunities during the construction phase although post construction employment would be limited a small number positions related to ongoing maintenance. The project will give rise to financial benefits by way of commercial rates and community gain benefits. The potential impacts on residential amenity arising from the construction and operational phases are assessed below. Issues related to landscape and visual amenity, and traffic and movement have been assessed in sections 6.4 and 6.5 above.

Shadow flicker:

The 2006 Wind Energy Guidelines require an assessment of the effects of shadow flicker on dwelling houses and community buildings located within a specified radius of the turbines (i.e. 10 x rotor blade diameter). The Guidelines also recommend that shadow flicker should not exceed 30 hours per year or 30 minutes per day, and state that at distances of greater than 10 x rotor diameters the potential for shadow flicker is very low. The 2019 Draft amendments to the Guidelines require the submission of a shadow flicker assessment and the attachment of a condition to ensure that there will be no shadow flicker at any nearby dwelling or other sensitive property by way of a computerised turbine shutdown at critical times.

The applicant applied the 10-x rotor blade diameter equation (10 x 155m max) and identified 89 shadow flicker receptors within c.1.55km of a turbine, the computer modelling examined the potential for shadow flicker occurrence at 83 x properties (excl. uninhabited & consenting owner properties) and concluded that c.70 properties could be affected by shadow flicker under worst case conditions (incl. 100% sunshine & no natural screening). Given that such optimum weather conditions are unlikely to occur, I am satisfied that the rotating turbines would not cause a disturbance at neighbouring sensitive properties. Notwithstanding this conclusion,

the applicant should be required to use a control system to pre-programme the turbines to prevent them operating at times of the day and year when shadow flicker could cause a nuisance. This could be addressed by way of a planning condition.

Having regard to all of the above, I am satisfied that the proposed turbines would not seriously injure the residential amenities of any houses or sensitive receptors in the surrounding area by way of shadow flicker, subject to compliance with the EIAR mitigation measures and any recommended planning conditions.

Dust & air quality:

The proposed excavation and construction work, and the activities associated with the access and road upgrades could also give rise to dust emissions. However, it is not anticipated that this would have an adverse impact on residential amenity having regard to the separation distances between the proposed works and neighbouring houses to the S, E and W of the site. However, the full implementation of the mitigation measures and stringent compliance with best construction practices would minimise any potential impacts on nearby houses.

Noise and disturbance – construction phase:

Given the nature and scale of the proposed development, the construction phase of the windfarm project has the potential to give rise to noise disturbance during the construction phase. This disturbance would mainly relate to the delivery of large components and materials along the local road network and road works which include junction upgrades at the site entrance. It would also include rock breaking and blasting at the borrow pits, excavation and construction works within the site for the turbines and substation, and the construction of new and upgraded access tracks throughout the site. Although these works would be short term and temporary, they have the potential to adversely affect residential amenities in nearby houses in the surrounding area and along the local roads around the site, and along the main delivery routes to the N and S. The proposed works along the cross-country grid connection route to the E could also give rise to disturbance at nearby houses at road crossings where mitigation measures would be implemented, although most of this route is sparsely populated, and the works would of a be short duration.

It is noted that the surrounding area is not densely populated although there are c.181 properties located within a 2km radius of the project mainly to the E, W and S of the site along the local road network. Most properties are located in excess of 1km from the nearest turbine and the nearest inhabited sensitive properties are located c.785m from T1 (P151) and c.786m T2 (P148). It is noted that although the overall construction phase for the windfarm would take c.24 months to complete, most of the site-specific works would occur over a much shorter time span and any adverse noise impacts on nearby properties would be localised, short term and temporary. Given the results of the construction phase noise assessment, which are considered to be robust, and having regard to the separation distances to the nearest noise sensitive properties, the construction work impacts would be mainly related to noise and disturbance along the delivery route which would also be short term and temporary. The EIAR noise control and monitoring measures are considered adequate and any outstanding noise concerns could be addressed by way of conditions which place restrictions of delivery times, hours of construction and blasting times. Local residents should be notified in advance of any major construction works including any rock blasting, mechanical excavations and of the transport of large pieces of plant and equipment along the local road network.

Noise and disturbance - Operational phase:

The 2006 Wind Energy Guidelines require an assessment of the effects of operational noise at sensitive locations. It recommends in low noise rural environments where background noise is less than 30dB(A), that the daytime level of the LA90,10min of wind energy noise be limited to an absolute level within the range of 35-40dB(A), whilst 43dB(A) should not be exceeded at night-time in other locations. It is noted that an upper limit of 45 dB (A) is considered acceptable for consenting owners.

The 2019 Draft Revised Guidelines have more stringent requirements for day and night time noise. The proposed amendments provide a much more detailed level of guidance (in line with WHO standards) and Technical Appendices that deal with the treatment and assessment of noise. It requires the applicant to provide for an assessment of Relative Rated Noise Limits (RRNL) measured as LA rated 10min which takes into account the cumulative impact of noise levels resulting from other

existing and permitted windfarms within an identified study area (where the RRNL may exceed 30dB LA90 up to 12m/s wind speed or an area within 3km of the project). The noise levels should not exceed background noise levels by more than 5dB (A) within the range 35-43dB (A) or 43dB (A) overall (day or night). Appendix 2 includes a noise compliant procedure to be submitted by the applicant, suggested planning conditions (incl. scheduled commitments, RRNLs & an annual monitoring report) and a Noise Verification Monitoring for larger projects. Applications should be accompanied by a noise modelling report, stated compliance with limits, a methodology for a post completion noise survey, a map of noise monitoring locations, and a proposal for a documented complaint handling procedure.

The EIAR defined a 2km Operational Noise Study Area around the proposed windfarm, it identified c.181 noise sensitive receptors (mainly dwelling houses) within this buffer zone where operational noise levels were predicted, and it set up noise monitoring locations at several locations around the site. The results of this assessment are summarised in section 6.6.3 above and it concluded that even under the worst-case scenarios, noise levels would not exceed 35dBA at any house to any significant or noticeable extent under any circumstances.

There are no occupied dwelling houses located within 780m of the proposed turbines. I am satisfied, based on the results of the Operational and Cumulative Noise Assessments, that the predicted noise levels would not significantly exceed the accepted criteria for day and night time noise at any of the properties which is in line with the current 2006 Guidelines. However, a planning condition should be attached to ensure that acceptable noise levels are not exceeded at any nearby houses, particularly under extreme weather conditions.

The proposed development seeks to comply with the Draft Revised Wind Energy Guidelines which was issued in December 2019. However, the maximum predicted noise levels at the nearest noise sensitive locations under high wind conditions within the surrounding rural area would not exceed the 43dB (A) absolute limit set out in the 2019 Draft Amended Guidelines. Compliance with other elements of the

2019 Draft Amendments (incl. monitoring & reporting) could be addressed by way of a planning condition in addition to the previously suggested curtailment strategy.

Having regard to all of the above, I am satisfied that the proposed development would not seriously injure the residential amenities of any houses or other sensitive receptors in the surrounding area by way of noise disturbance, subject to compliance with the EIAR mitigation measures and the recommended planning conditions.

Residential visual amenity

The 2006 Wind Energy Guidelines require a 500m setback between a turbine and the nearest dwelling house in order to protect residential visual amenity. The 2019 Draft amendments to the Guidelines also require a 500m setback or a setback in the order of 4 x times the tip height of the turbine, depending on its's height.

The proposed 21 x turbines (under the various turbine dimension options summarised above) would occupy a moderately elevated rural landscape and by virtue of their height and elevated position they would be visible from a variety of locations in the surrounding area. The EIAR identified c.181 dwelling houses within a 2km radius of the proposed development which are mainly located to the E, W and S of the site.

None of the houses are located within either 500m or 740m of the proposed turbines (in line with the 2006 Guidelines and 2019 Draft amendments), and the two closest properties were omitted from the assessment as they are either unhabitated or involved with the project. Although most of the houses would be located outside a 1km radius of the windfarm, they would have partial views of the turbines because of their position relative to the elevated site, although this would mainly relate views of the upper sections of the turbines (blades and/or nacelles) but not the entire structures.

Having regard to my assessment of the site and surrounding area, the physical characteristics of the terrain, the absence of dwelling houses within a either 500m or 740m radius to the turbines, the substantial separation distances between the proposed windfarm and the nearest houses, I am satisfied that although the turbines would be intermittently visible from the surrounding area, the proposed development

would not have an adverse impact on the visual amenities of dwelling houses or community buildings in the vicinity. Although the visual impacts would be higher from a small number of locations (incl. Ballytarsna to the SW), the resultant effects on residential amenity would not warrant a refusal of permission or an alteration to the turbine layout, having regard to national and regional policy in relation to renewable energy.

Other issues:

The concerns raised by several of the Observers (incl. local residents) in relation to infrasound, low frequency and noise amplitude modulation and noted, however I am not satisfied that these concerns are currently supported by peer reviewed scientific and empirical evidence, at this point in time.

Conclusion:

Having regard to all of the foregoing, I am satisfied that the proposed development would not have a significant adverse impact on population or human health by way of shadow flicker, dust, noise, vibration or visual intrusion.

6.6.6 Conclusions:

Residual Effects: There will be some increase in noise, and/or dust emissions during the construction and operational phases, however predicted levels are within guidance limit values. Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions.

Cumulative Impacts: Any cumulative noise impacts during the operational phase when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered all the written submissions made in relation to population and human health, in addition to any specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion: Having regard to all of the above, I am satisfied that the proposed development (under the various turbine dimension options as summarised in sections 4.5.1 & 6.1 above) would not adversely affect population, human health, or air and climate, to any significant extent as a result of noise, shadow flicker, dust emissions or visual intrusion, subject to the full implementation of the mitigation measures and any recommended planning conditions. The proposed development would not give rise to any significant adverse cumulative impacts, in-combination with other windfarms, the grid connection route or plans and projects in the area.

6.7 Land, Soil & Geology (incl. Site stability)

6.7.1 Project description & location

The proposed windfarm would comprise extensive excavation works associated with the construction of the 21 x turbines and associated infrastructure including underground cabling, access tracks and 3 x borrow pits within a moderately elevated area that is mainly characterised by coniferous forestry plantations agricultural fields. The predominantly mineral based soils are underlaid by a bedrock of Devonian sandstone, and there are some remanent pockets of peat, mainly in the N and S sections, which the works would largely avoid. There is an existing quarry located to the NW of the site at Kiltorcan, and the lands mainly drain E and W to nearby watercourses (Arrigle & Derrylackey rivers) via on site drainage ditches and streams. The various turbine dimension options are summarised in sections 4.5.1 and 6.1 above.

6.7.2 Environmental Impact Assessment Report

Chapter 8 of the EIAR deals with soils and geology and the associated Technical Appendices contain Ground Investigation and Peat and Soil Stability Assessment Reports (Appendix 8-1, 8-2 & 8-3), and a Construction and Environmental Management Plan (Appendix 2.7). Several desktop studies, field surveys and site suitability tests were undertaken. Chapters 6 and 9 of the EIAR deals with biodiversity and hydrology & hydrogeology, and issues related to water quality and aquatic ecology will be assessed in section 6.8 below.

The EIAR described the **ground conditions** (Appendix 8.1) as consisting of a mix of mainly mineral soils underlaid by a bedrock of Devonian sandstone with some pockets of shallow peat mainly in the N and S sections (less than 0.15m). The results indicate that soil depths vary across the site (c.0.1 to 4.5m). The survey works included c.45 trial pits at the infrastructure locations, 4 x rotary core boreholes were completed to a depth of 20.2mbgl at 2 x borrow pits and Arrigle River locations, and 3 x groundwater monitoring wells were installed.

The **Landslide Susceptibility Maps** indicate that the landslide risk over much of the site is categorised as Low with some small pockets of Moderately Low Risk dotted throughout the site, a Moderately-High risk area along the E site boundary, and an area of High susceptibility c.1.8km outside the site. The nearest recorded landslides occurred c.5.7km from the site.

The **Peat Stability Risk Assessment** (Appendix 8.2) contains desk and site investigations. It confirmed that there are no mapped peat sediments within the windfarm site. Only 1 of the 45 trial pits encountered peaty material and the walkover survey found limited evidence of peaty and organic topsoil in the N and S sections of the site (c.0.15m deep). An area located between T20 and T21 which comprises a thin layer of peaty soil has a Moderately High landslide susceptibility however the peat depth was less than 0.15m with a Negligible risk of instability. T16 and T21 would be located within an area of Moderately High landslide susceptibility, however the absence of peat at these locations indicates a Negligible risk of instability. Given the limited depths and extent of peaty soils, the assessment concluded that no qualitative or quantitative peat stability risk assessments were required. Normal detailed design and construction mitigation would be adequate, including ongoing site supervision.

The **Soil Stability Assessment** (Appendix 8.3) was based on the ground investigations carried out on the site and the contours of the ground, and the results are reported in terms of Overdesign Factor rather than Factor of Safety. The analysis assessed the interaction of several variable (inc. slope angle, shear strength of soil, depth of soil, pore water pressure & loading conditions) under drained and undrained conditions and undertaken at 3 x locations (near T14 & T16 and between T20 & T21) under both “soft” and “firm” scenarios. All Overdesign Factors were greater than 1.0 which indicates that the stability of the soil is satisfactory in both the short term (undrained) and long term (drained) condition. The assessment concluded that there was a Low risk of instability, and that normal detailed design and construction mitigation would be adequate, including ongoing site supervision.

The EIAR did not identify any stability issues along the haul route, grid connection route or access tracks, subject to general construction control measures.

The EIAR states that the **excavation works** will give rise to soil and spoil which would be temporarily stockpiled within the site and reused as fill material, and c. 164,300sq.m of rock would be excavated from 3 x borrow pits for use on the site for turbine hardstands and internal access tracks. It states that contamination of bedrock and soils could arise from leakages, spillages and geochemical soil alterations but with no significant adverse impacts subject to mitigation measures (incl. bunded storage of chemicals & fuels, storm drainage with oil interceptors; minimal refuelling, maintenance of plant & equipment; and an emergency plan & spill kits). It states that erosion of exposed subsoils could arise during the construction works from vehicle movements, surface water runoff and wind action, but with no significant adverse impacts subject to mitigation measures (incl. re-using soil for landscaping).

The EIAR did not predict any significant adverse in-combination impacts during the operational or future decommissioning phases subject to the implementation of similar construction phase mitigation measure during decommissioning. The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

6.7.3 Assessment

As previously stated, I surveyed the wind farm site and the surrounding area in County Kilkenny over a 3-day period in June 2021 and May 2022. I had regard to the relevant EIAR studies which are summarised in section 6.7.2 above. I also had regard to the concerns raised by the Observers which are summarised in section 4.0 above (Incl. Irish Water, KCC & local residents) which related to risk of landslides, water abstraction, drinking water quality, water quality and aquatic wildlife, and I had regard to the applicant's response to these concerns which is summarised in section 4.5 above, and in particular the turbine dimension details which are summarised in sections 5.4.1 and 6.1. I also had regard to national, regional and local planning policy which is summarised in section 3.0.

The proposed windfarm would be located within a moderately elevated and gently sloping rural area which mainly comprises commercial forestry plantations and

agricultural land, and the lands mainly drain E to the Arrigle River and W to the Derrylackey River. According to the GSI Landslide Susceptibility Maps, the risk of landslides varies from Low and Moderately Low across most of the site to Moderately High around the E perimeter. Most of the turbines would be located in areas where the risk is predicted to be Low to Moderately Low, whilst one would be located within an area where the risk is Moderately High (T16), but on lands described as stable in the Soil Stability Risk Assessment. The site elevations across the site vary between 145mAOD and 250mAOD and site gradients do not vary greatly across the site at the location of the turbines. The met mast would be located on moderate slopes, as would most of the access tracks, whilst the grid connection would traverse a mainly low-lying area to the E of the site.

Average soil depths across most of the site vary from c.0.1m to c.4.5m. The mainly mineral based soil is underlain by bedrock and some of the turbines would be located within areas where the soil depth is quite shallow and less than 1m (T1, T4, T6, T10, T19). None of the turbines would be located in areas where peat is present, the receiving soils are firm, there is no recent history of landslides or soil slippages in the area, and other windfarms in the wider area have not given rise to slippage.

The proposed works would require the excavation and movement of substantial quantities of soil and bedrock from across the site and it is estimated that a substantial proportion would also be reused within the site during the construction phase for the turbine hardstands and access tracks. The soil excavation and movement works have the potential to affect soil hydrology and drainage patterns in the area (refer to section 6.8 below). The unregulated excavation and construction work, particularly on steeper N facing slopes with deeper soils, could also give rise to instability and slippage, with resultant serious adverse impacts on the environment.

An extensive range of site survey suitability tests were undertaken at the site of the various project elements. As previously stated, the results indicate a relatively shallow soil depth across most of the site, except for a small number of locations where deep soil was recorded but where no works are proposed, and areas of peat will be avoided. Most of the turbines would occupy positions where the Landslide Susceptibility Risk is rated as Low to Moderately Low. The turbines that would be

located within or close to areas rated as Moderately High occupy locations where the slope angles are relatively low, the aspect is mainly S facing, there is an absence of peat, and soils are Firm, which would further reduce the risk of instability and slippage in the surrounding lands (T16, T20 & T21). It is noted that the Soil and Peat Stability Risk Assessments concluded that the risk of stability issues arising at these locations was Negligible. Site conditions and soil depths at the met mast, substation and access tracks were recorded as being similar to the overall site.

The suite of EIAR mitigation measures include detailed design and construction measures for all project elements across the entire site including general and site-specific mitigation measures, and proposals to manage soil storage and reuse, and prevent erosion and slippage. The proposed arrangements are considered acceptable in terms of mitigating the risk of soil instability and slippage. However, the mitigation measures should be applied at the preliminary design stage, detailed design stage and construction stage, and be subject to ongoing monitoring throughout the construction and operational phases. This could be addressed by way of a planning condition.

Having regard to the foregoing, I am satisfied that the applicant carried out an extensive range of surveys and site suitability tests which were used to inform the location of the proposed turbines, met mast, substation, borrow pits and new and upgraded access tracks. I am satisfied that the results of the Soil and Peat Stability Risk Assessments are robust and that the proposed works would not give rise to soil or peat instability or slippage, subject to the avoidance of peaty soils and stringent implementation of EIAR mitigation measures and any recommended conditions, along with on-going site inspections and monitoring for the lifespan of the windfarm project. Although the excavation of bedrock and soil would have a permanent direct impact on soils and geology, the impacts on the environment would not be adverse.

6.7.4 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of mitigation measures and any recommended planning conditions.

Cumulative Impacts: Any cumulative impacts during the construction and operational phases when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered all the written submissions made in relation to Land, Soil and Water in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion:

Having regard to all of the above, I am satisfied that the proposed development (incl. the various turbine dimension options as summarised in sections 4.5.1 & 6.1 above) would not have a significant adverse effect on land, soils, geology or give rise to slope or soil/peat stability subject to the full implementation of the mitigation measures and any recommended conditions. The proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, the grid connection route, or plans and projects in the wider area.

6.8 Hydrogeology & hydrology (incl. Water quality & ecology)

6.8.1 Project description

The proposed development would comprise the excavation works associated with the construction of 21 x turbines and associated infrastructure including borrow pits, temporary construction compounds, substation, access tracks, underground cabling and grid connection to the E, along with minor road works along the delivery routes. The grid connection would cross 3 x watercourses/drainage ditches to the E of the site via directional drilling and trenching within an existing culvert. The various turbine dimension options are summarised in sections 4.5.1 and 6.1 above.

6.8.2 Locational context

The windfarm site and environs are located within the SE River Basin District, and at regional level the site is located across the River Suir and River Nore Catchments.

The moderately elevated site (145m to 250mAOD) is characterised by commercial forestry plantations and agricultural lands, and the lands mainly slope down gently to the E and W. The site drains W to the Ballytarsna and Derrylackey Rivers, and E to the River Arrigle via a network of on-site drainage ditches and watercourses. The grid connection route would traverse the River Arrigle and 2 x tributaries to the E (Mullenhakill & Garrandarragh Streams).

The River Arrigle to the E of the site is a tributary of the River Nore and both rivers form part of the River Barrow and River Nore SAC which ultimately discharges S to the coast at Waterford via the Barrow Estuary. The Ballytarsna and Derrylackey Rivers to the W of the site drain to the River Blackwater which discharges S to the Lower River Suir and ultimately the coast also via the Barrow Estuary. Public water abstraction takes place at various points along the watercourses to the W of the site.

The River Water Quality status for the receiving watercourses is described as unpolluted and of Good Status (Q4 & Q4-5). According to the OPW's river and

coastal flood maps there have been no recurring flood incidents within the windfarm site or the surrounding area in recent decades, and the 1 in 100-year flood zones around the river network are confined to the area surrounding stream channels.

The GSI has 2 x classifications for the underlying bedrock, Locally Important (LI) productive only in local zones to the W, and Poor Aquifer (PI) which are generally unproductive except for local zones to the E. Groundwater movement is localised and reflects the topography of the area. The vulnerability of the aquifers varies between mainly Medium and Extreme where bedrock is within 1m of the surface, and the WFD status for the local ground waterbodies is Good Status in terms of water quality. There are no Groundwater Protection Zones or mapped wells within the windfarm site, however there are several locally protected zones, abstraction points and private wells located in the wider area. St Molin's Holy Well to the E is spring fed from the site.

There are several sensitive aquatic sites in the surrounding area. These include the River Nore SPA to the N and E which is designated for Kingfisher, the River Barrow and River Nore SAC to the E which is designated for a wide range of habitats and species including Floating River Vegetation, Alluvial forests, Otter, Freshwater & Nore Pearl Mussels, White-clawed Crayfish and fisheries (incl. Sea, Brook & River Lampreys & Salmon), and the further field Lower River Suir SAC to the S.

6.8.3 Environmental Impact Assessment Report

Chapters 6, 8 and 9 of the EIAR and associated Technical Appendices dealt with geology, hydrogeology, hydrology, water quality and aquatic ecology, and several desktop studies and field surveys were undertaken. Chapter 8 of the EIAR dealt with geology, soils, land and soil stability, which are assessed in section 6.7 above.

Chapters 6 dealt with Biodiversity and issues related to terrestrial ecology and birds will be assessed in sections 6.9 and 6.10 below.

The EIAR (and FI response) described the receiving environment (incl. topography, soils & geology, surface & ground water, and water quality & aquatic ecology) and it had regard to the EPA and WFD water quality reports and studies, OPW Flood Maps

and the GSI groundwater database. A range of investigations were undertaken including a hydrological walkover survey and detailed drainage mapping; biological and chemical surveys; habitat and ecological assessments for fisheries, aquatic invertebrates; an identification of flood risk; and an assessment of groundwater quality, flow paths, abstraction points and wells was undertaken. It stated that water quality in the receiving watercourses is mainly High and of Good Status (Q4 & Q4-5) and that the waterbodies support a variety of pollution intolerant freshwater invertebrates, fish and plant species. The River Arrigle (Q4-5) contains good spawning and nursery habitat for Salmon and River Lamprey, and Floating River Vegetation was recorded in this watercourse. Freshwater and Nore pearl mussels, White-tailed Crayfish and Lampreys (Sea & Brook) are present in the wider River Nore system but not within the site or immediately downstream of the works. Groundwater conditions were described as Good.

The EIAR analysed rainfall data relative to site conditions, soil characteristics and existing drainage arrangements. It concluded that there would be a temporary increase in surface water runoff during the construction phase with an imperceptible predicted increase over baseline conditions during the operational phase. No risk of down gradient flooding was predicted. It identified a potential risk of water pollution from suspended solids at site work locations (incl. turbines, borrow pits, access tracks, substation & grid connection) and along sections of the haul route. It proposed a range of mitigation, avoidance, inspection and monitoring measures as part of a Construction and Environment Management Plan (CEMP), adherence to best practice and compliance with relevant Guidelines, as well as the provision of a 50m buffer zone around water courses (except for river crossings). The main potential impacts and proposed mitigation measures in relation to the turbines, associated infrastructure, grid connection and delivery routes are summarised below.

Construction	Potential impacts	Mitigation measures
Earthworks	Soil erosion Sediment release Sediment laden water	50m buffer around streams. Design (sediment traps, collector drains & attenuation ponds). No direct discharge to drains. Management of stockpiles.

		Timing, seasonality & weather dependency of works. Monitoring & management.
Tree felling	Soil erosion Sediment release Sediment laden water	Design (as above) Buffer zone management (10-25m) No tree felling within 150m of streams. Comply with Forestry Service guidance
Excavations	Dewatering Additional volumes of water (borrow pits)	Design (as above). Surface water management system. Interceptor drains & attenuation ponds. No direct discharge. Monitoring & management.
Refuelling/spillages	Toxic to humans Toxic to flora & fauna Nutrient supply (to microorganisms & oxygen depletion)	Design (as above). Controlled refuelling. Minimal fuel storage in bunds. Inspection of plant & machinery. Emergency plans & spill kits.
Wastewater	Ground & surface water pollution	Avoidance (port a loo). Management of water supplies. No discharges on site.
Cement	Water quality & pH Fish (burning skin & blocking gills).	No wet cement works on site. No washing out of plant. Pre-emptive management.
Watercourse & drainage patterns	Morphological changes (diversion, culverting & road crossings). Water quality & flows	No diversions proposed, minimal culverts & utilise existing drains. Design (incl. clear span bridges, buffers, fences & brash mats). Timing, seasonality & weather dependency of works. Avoid breeding seasons (Otter, Badger, Salmon & Kingfisher). Pre-construction surveys. Comply with guidance (OPW, IFI, etc.)
Designated sites & sensitive habitats	Water quality & Sediments.	All the above measures.

Operational	Potential impacts	Mitigation measures
Less permeable surfaces	Surface water runoff. Increased hydraulic loading during storms. Watercourse erosion & aquatic ecosystems.	Design (incl. drains & settlement). Timing, seasonality & weather dependency of works.
Human health	Public & private & water supplies. Flood risk	No mapped ground water protection zones in vicinity. Downstream monitoring at abstraction points. Low risk of downstream flooding

The EIAR concluded that, subject to the implementation of the mitigation measures, there would be no significant residual adverse impacts on surface or ground water quality, aquatic ecology or any public or private water supplies, group water schemes, wells or public abstraction points, and that the proposed development would not give rise to a downstream flood risk. It did not predict any significant adverse cumulative impacts during the operational or future decommissioning phase. The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

6.8.4 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area and the wider riparian environment in County Kilkenny over a 3-day period in June 2021 and May 2022. I had regard to the relevant EIAR studies and field investigations which are summarised in section 6.8.3 above. I also had regard to the concerns raised by the Observers which are summarised in sections 4.0 (incl. KCC, IW, heritage groups & local residents) in relation to surface and ground water management, and potential impacts on public water supplies, drinking water quality, water quality, aquatic wildlife and fisheries. I had regard to the Applicants' response to these concerns which is summarised in section 4.5, including the various turbine dimension details (as summarised in sections 4.5.1 and 6.1 above). I also had regard to relevant national, regional and local planning policy as summarised in section 3.0.

The excavation and movement of large quantities of soil and spoil around the site has the potential to release fine sediments into the network of drainage ditches and watercourses that traverse the site via surface water runoff. Tree felling and vegetation clearance also has the potential to release fine sediments into surface waters. These waterbodies drain to larger waterways in the surrounding area, including S and W to the Ballytarsna, Derrylackey and Blackwater Rivers, and N and E to the Arrigle and Nore rivers. The excavation of bedrock for turbine foundations and borrow pits and any resultant dewatering has the potential to adversely affect ground and surface water levels across the site and environs.

The unregulated release of sediments could have an adverse long-term impact on water quality and aquatic ecology within and downstream of the site, and any dewatering at excavation sites or borrow pits could affect ground water levels. Such uncontrolled events could adversely impact the chemical balance and the biological composition of the receiving surface and ground waters downstream, with resultant adverse impacts on water supplies and drinking water quality (incl. abstraction points & wells), water quality, habitats and species (incl. Floating River Vegetation, fisheries & aquatic invertebrates in the River Arrigle). Accidental fuel spillages from storage areas, machinery, vehicles and directional drilling equipment also have the potential to contaminate surface and groundwater. The underground cabling works for the grid connection, and improvement works along the delivery route also have the potential to release sediments into nearby watercourses and cause disturbance to wildlife.

The potential impact of the proposed works on geology, soils and site stability is dealt with in section 6.7 above and the potential impacts on terrestrial ecology will be assessed in sections 6.9 below.

In relation to design and layout of the windfarm infrastructure, a buffer zone of at least 50m would be provided along watercourses within the site, and the turbines, ancillary structures and associated infrastructure would be mainly located outside these zones. Tree felling would not take place within c.150m of the main watercourses (incl. Mullenhakill, Arrigle & Garrandarragh) and a 10m to 25m buffer would be provided around sensitive aquatic zones within the tree felling areas depending on the slope angle. In-stream works in the 3 x main watercourses

traversed by the grid connection would be avoided by way of Directional Drilling (Mullenhakill & Arrigle) and the utilisation of existing culverts (Garrandarragh).

The EIAR also proposes a comprehensive suite of mitigation measures to control and manage the release of fine sediments and hydrocarbons into surface and ground water to prevent pollution of nearby water courses and underlying groundwater bodies. These measures are summarised in section 6.8.3 above they mainly include layout and design features, a series of avoidance measures as part of an Construction Environmental Management Plan (CEMP), and a detailed Surface Water Management Plan, along with ongoing site inspections and water quality monitoring, and strict adherence to all relevant EU and national water quality and drinking protection requirements.

The EIAR and associated Technical Appendices contain the results of extensive ecological surveys of the windfarm site, the surrounding watercourses and the rivers that they drain into. The surveys did not record the presence of any sensitive aquatic invertebrate species (incl. Freshwater & Nore pearl mussels or White-clawed crayfish) within the on-site watercourses or in the immediately downstream rivers. Although the surveys identified good breeding habitat for White-clawed crayfish downstream in the River Arrigle, no specimens were recorded. The surveys also recorded the presence of Floating River Vegetation (and several constituent species) in the River Arrigle along with suitable spawning, nursery and migratory habitat for several species of fish (incl. Salmon, Lampreys & European eel), but not within the on-site watercourses. The surveys also recorded evidence of foraging otters and Kingfisher along some watercourses in the wider area.

As previously stated, none of the turbines would be located within the 50m buffer around drains and watercourses which ultimately drain into tributaries of the Arrigle River and hence the River Barrow and River Nore SAC, or the tributaries of the Ballytarsna or Derrylackey rivers that drain into the River Blackwater and ultimately the Lower River Suir SAC. Most of the turbines would be located on gentle slopes and within areas where the Landslide Susceptibility Risk is Low and the risk of Soil Instability is Negligible to Low. Although T16 and T21 would be located within an area of Moderately High landslide susceptibility, the absence of peat at these

locations indicates that there is a Negligible risk of instability. The EIAR assessments concluded that there was a Low risk of instability across the site and that normal detailed design and construction mitigation would be adequate. Excavations at the Borrow pits would not exceed c.10m, any dewatering would be managed and controlled by mitigation measures with no resultant adverse impacts on surrounding groundwater levels, abstraction points or wells anticipated. However, a condition should be attached to ensure that extraction in the borrow pits does not take place below the level of the winter water table, in line with KCC recommendations. Having regard to the foregoing, I am satisfied that the proposed suite of mitigation measures would adequately protect water quality, drinking water supplies and aquatic ecology in the vicinity of the turbines, borrow pits, tree felling, ancillary works and along the grid connection and delivery routes.

The results of the EIAR water quality and aquatic ecology surveys are considered to be robust. The mitigation measures are considered acceptable as they will prevent any serious long-term damage to water quality, drinking water sources and aquatic ecology. This includes Floating River Vegetation, Freshwater & Nore pearl mussel populations, White-clawed crayfish and fisheries in the nearby watercourses that ultimately drain into the River Barrow and River Nore SAC that the grid connection traverses via the River Arrigle, and which the E section of the site mainly drains into. It also includes the further afield Lower River Suir SAC that the W section of the site ultimately drains to via nearby watercourses (incl. Ballytarsna, Derrylackey & Blackwater rivers). I am also satisfied that the various EIAR studies were undertaken in accordance with the relevant guidance for such works. However, the EIAR sediment control measures should be operational before construction works commence and the entire works should be monitored by an on-site Ecologist on a regular basis. These issues could be addressed by way planning conditions.

Conclusions:

I have had regard to the separation distance between the windfarm site, grid connection and delivery route from the nearest recorded locations of sensitive aquatic species (incl. Floating River Vegetation, Aquatic Invertebrates & Fisheries), and to the layout and siting of the project elements, which would be mainly set back c.50m from nearby watercourses. I am satisfied, that subject to the stringent

implementation of the EIAR mitigation measures, including ongoing inspections and monitoring, and adherence to EU and national water quality and drinking water protection requirements, in-combination with any recommended conditions for the construction and operational phases, the proposed works would not have a significant adverse impact water quality, water supplies, drinking water quality, sensitive aquatic species, or any other sensitive ecological sites in the area. Finally, having regard to the characteristics of the underlying bedrock (incl. shale & sandstone), which is relatively impermeable, and the relatively unproductive nature of the Aquifer, I am satisfied that the proposed works would not have an adverse impact on groundwater quality or any ground water abstraction points or wells in the wider area, subject to the stringent implementation of the EIAR mitigation measures and any recommended conditions, and adherence to EU and national standards to protect water quality, during the construction and operation phases of the project.

6.8.5 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of the EIAR mitigation measures and any recommended conditions.

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent, having regard to the conclusion of no significant impacts with respect to the project.

Conclusion: I have considered all the written submissions made in relation to water quality, aquatic ecology and designated sites, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion:

Having regard to all of the above, I am satisfied that the proposed development, including the turbines (and various turbine dimension options as summarised in sections 4.5.1 and 6.1 above) and associated infrastructure and the underground gird connection would not have a significant adverse effect on water quality, aquatic ecology, public water supplies, drinking water quality, or groundwater reserves,

subject to the full implementation of the EIAR mitigation measures, any recommended conditions, and adherence to all relevant guidance and best construction practice. The proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, grid connections, plans or projects in the wider area.

6.9 Biodiversity (Terrestrial ecology – excl. birds)

6.9.1 Project description

The proposed development would comprise the works associated with the construction of 21 x turbines and associated infrastructure including borrow pits, temporary construction compounds, substation, access tracks, underground cabling, and grid connection to the E, along with minor road works along the delivery routes. The various turbine dimension options are summarised in sections 4.5.1 and 6.1 above.

6.9.2 Locational context

As previously stated, the site occupies a moderately elevated location and there are several protected European and National sites in the surrounding area. The moderately elevated windfarm site (145m to 250mAOD) is mainly characterised by commercial forestry plantations surrounded by pockets of broad-leafed trees and farmland, and the lands slope down gently to the E and W. The lands drains E to the River Arrigle and W to the Ballytarsna and Derrylackey Rivers via a network of on-site drainage ditches and watercourses which ultimately discharge to the River Barrow and River Nore SAC to the E and the Lower River Suir to the far S. The grid connection to the existing 110kV overhead powerline would be located within an agricultural area that is mainly characterised by fields and hedgerows. Other protected and/or sensitive sites in the wider area include lakes, bogs, fens and woods, and it is possible that mobile species from further afield sensitive sites visit the site and environs (incl. birds & otter).

6.9.3 Environmental Impact Assessment Report

Chapters 6 and 7 of the EIAR, associated Technical Appendices and Further Information Response dealt with Biodiversity within the windfarm site and environs, and along the grid connection and delivery routes. Desktop studies (site & 10km buffer), walk over surveys and field surveys were undertaken in 2 x phases (2017-2020) and used to inform the conclusions of the EIAR and NIS. The EIAR identified sensitive sites located within a c.15km radius of the site (SACs, SPAs & NHAs). It

mapped habitats, identified plant species and conducted field surveys for mammals, amphibians, reptiles and invertebrates within and close to the site. It identified the main potential impacts as habitat loss and degradation (mainly conifer plantations & improved grasslands), disturbance to various plant and animal species during construction (incl. badgers, bats & birds), and bat and bird collisions with turbines when operational. It proposed several mitigation measures (incl. avoidance, buffer zones, seasonality & timing of works, pre-construction surveys, habitat creation & enhancement plans, and turbine curtailment), and concluded that there would be no adverse residual or cumulative impacts post mitigation. EIAR Appendices 6.1 to 6.5 contains the results of several ecological surveys (incl. Vegetation, Badger, Fisheries & Bats) and Appendix 6.6 contains a Biodiversity Management Plan. Appendices 7.1 to 7.8 contain the results of the bird surveys).

Designated sites: the windfarm and substation sites are mainly located within commercial forestry plantations and agricultural lands and not within a European or National site, however the grid connection would cross the River Arrigle and tributaries which forms part of the River Barrow and River Nore SAC. There are several designated sites in the wider area (c.15km) which have the potential to be affected by the works (SACs, SPAs & pNHAs).

Habitats: the windfarm site is mainly occupied by coniferous forestry plantations in various stages of maturity and improved agricultural grassland (incl. dry stone walls & hedgerows) with sections of Broad-leaved woodland along the perimeter of the site. There are several small patches of semi-natural sensitive Annex 1 habitat within the site including a heathland complex (blanket bog, wet heath and poor fen & flush), Wet Heath, Dry Heath, a small oligotrophic lake, Species Rich Wet Grassland and Reed Swamps, along with Wet Grassland and Hazel Woodland along the grid connection route, and Amenity Grassland along the delivery routes.

Flora: none of the plant species recorded within the windfarm site or along the grid connection and delivery routes are listed under the Wildlife Acts or covered by a Flora (Protection) Order.

Invasive species: Invasive plant species were recorded in small patches in the site and along the delivery route (incl. Japanese Knotweed & Rhododendron).

Bats: a desktop study was carried out to collate bat data within 10km of the windfarm site, and on-site seasonal dusk and dawn surveys were conducted between 2017 and 2018 in line with SNH Guidelines. Several species of foraging and commuting bats are present within the site and surrounding area and 9 x roost sites in 17 x buildings were identified, some of which are nursery roosts. The 2020 survey identified another nursery roost site in a building, giving a total of 10 roosts.

Other mammals: it notes the presence Badger, Fox, Pine martin, Hare, Stoat, Bank Vole, Red squirrel and Wild boar within or close to the site. The Badger Report identified a cluster of Badger setts in the NE section of the site, and it mapped the location of the entrances and level of activity at the main breeding sett. No Otter breeding or resting sites recorded although it may commute along watercourses.

Amphibians & Reptiles: it noted that Common frog is known to frequent the site and surrounding area, and that although no Reptiles were recorded although Common Lizard may be present along forestry tracks within the site.

Invertebrates: it noted that several species of conservation interest butterfly frequent the site and surrounding area (incl. Dingy Skipper & Small Heath) and that no rare or protected invertebrates were recorded during surveys.

EIAR Conclusions:

The EIAR identified potential impacts during the construction and operational phases (incl. habitat loss and species disturbance), and it concluded that there would be no adverse residual impacts on any nationally designated sites, habitats or species. This would be subject to the implementation of mitigation measures, pre-construction surveys, seasonal works, avoidance measures to protect badgers and bats around construction works and operational turbines, and the replacement and restoration of habitats. The EIAR concluded that there would be no adverse cumulative impacts in-combination with other plans, projects or windfarms in the wider area. The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

6.9.4 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area in County Kilkenny and the neighbouring counties over a 3-day period in June 2021 and May 2022. I had regard to the relevant EIAR environmental and ecological studies which are summarised in section 6.9.2 above and the concerns raised by the Observers which are summarised in sections 4.0 (incl. NPWS, KCC, heritage groups & local residents). Their concerns related to potential impacts on European sites, habitats, protected species & proximity to windfarm works. I had regard to the Applicants' response to these concerns which is summarised in section 4.5 above, including the various turbine dimension details (as summarised in sections 4.5.1 and 6.1). I also had regard to relevant national, regional and local planning policy which is summarised in section 3.0 above.

The windfarm site is not located within a European site although there are several sensitive sites (incl. SACs, SPAs & pNHAs) within a 15km radius of the works. The proposed grid connection would cross the River Arrigle and 2 x tributaries which form part of the River Barrow and River Nore SAC, although there would be no in-stream works. There is a direct aquatic connection to the River Nore SPA and River Barrow and River Nore SAC to the E, and an indirect connection to the further afield Lower River Suir SAC to the S via on- and off-site watercourses to the W of the site.

The proposed windfarm and substation would be mainly located within coniferous forestry plantations and agricultural lands which are traversed by small watercourses and drainage ditches, and there are remnants of Annex 1 heathland habitats dotted across the windfarm site. This includes small heathland mosaics (Blanket bog, Wet heath and Poor fen & flush), and patches of Blanket bog, Wet Heath and Dry Heath, with a small oligotrophic lake. The proposed excavation and construction works could result in the loss or disturbance to parts of these habitats. The windfarm site and environs are used by several animal species including mammals, amphibians and invertebrates, some of which are protected. It has commuting, foraging and roosting potential for several species of bat, and the proposed works could result in disturbance, displacement, and loss of support habitat. The proposed works therefore have the potential to affect several habitats and species.

The potential impact of the proposed works on aquatic ecology have been assessed in section 6.8 above, the impacts on birds will be assessed in section 6.10 below. Issues related to European sites will be addressed in Section 8.0 (Appropriate Assessment).

Natural Heritage Areas (NHAs):

The proposed development would not be located within a designated NHA or proposed NHA and there are no NHAs within a c.15km radius of the windfarm site. Although there are several proposed NHAs in the wider area (incl. lakes, fens, bogs, woods & villages), they do not have the potential to be affected by the proposed works because of the nature and characteristics of the heritage site, the absence of an aquatic connection with the development site, and the extent of the separation distances.

Habitats and flora:

The receiving environment is mainly characterised by coniferous forestry and agricultural land which is of low conservation value. There are stands of broad-leafed trees located around the perimeter, some small pockets of remnant Annex 1 heathland mosaic habitats mainly in the N and S sections of the site (incl. Blanket bog, Wet & Dry heath, Poor fen & flush), a small Oligotrophic Lake, and Species rich wet grassland, Reed swamps and Hazel woodland along the grid connection route and in the vicinity of the River Arrigle. The proposed tree felling, excavation and construction work have the potential to adversely affect several habitats (incl. habitat loss, and changes to hydrology & groundwater conditions) in the absence of mitigation, and operational phase maintenance could give rise to habitat disturbance.

In relation to **habitat loss**, most of the habitats that will be permanently lost due to hard infrastructure, buffers around the turbine and substation, and along the grid connection and delivery routes mainly comprise coniferous forestry plantations, improved agricultural grassland, hedgerows and amenity grassland. Most of these habitats are of Moderate Local Value, their loss would not have a significant adverse

impact on biodiversity, and some of the forestry will be replaced when the work is complete at the borrow pits and construction compounds.

However, the loss of mature broad-leafed woodland habitat (c.0.88ha) in the vicinity of T21 would constitute a significant adverse impact at local level, whilst the loss of young mixed broad-leafed / conifer plantation (c.1.4ha) in the vicinity of T15 would have less of an impact as the constituent species are non-native. The minor loss of wet heath / conifer mosaic habitat around the turbine bases to provide bat buffer zones could ultimately result in an increase in wet heath habitat at these locations as a result of the tree felling, which would be a positive impact for biodiversity. There could be some loss of and disturbance to the remnant Annex 1 heathland mosaic habitats (incl. Blanket bog and Wet & Dry heath) and Species rich wet grassland during the works, with localised loss of habitat in the vicinity of T18 and T20, and near T21, which would result in temporary to short term significant adverse effects at local level, in the absence of mitigation.

However, the mitigation measures include avoidance (the borrow pit near T15 was relocated away from a pocket of Blanket bog), habitat protection fencing and exclusion zones, and a Biodiversity Management Plan (Appendix 6.6) under which additional land will be managed for biodiversity. Although not all of the affected habitats will be replaced on a like-for-like basis (incl. broadleaved woodland & hedgerows), some of the heathland and wetland habitats within the windfarm site and along the grid connection route, and in the vicinity of the River Arrigle would be replaced or augmented. On balance, I am satisfied that the overall contribution of the Management Plan would be positive for habitats and biodiversity.

The proposed tree felling, excavation and construction work also have the potential to adversely affect the surrounding environment and sensitive habitats by way of ***disturbance to soil morphology and hydrology***. However, I am satisfied the impacts would not be significantly adverse, subject to the implementation of the mitigation measures outlined in sections 6.7 and 6.8 above in relation to soil stability, erosion control and surface water management. In the long term, it is also possible that the habitats could be further restored in the future after decommissioning.

Other habitats: There is a myriad of forestry, agricultural and amenity grassland habitats located within the windfarm site, in the vicinity of the access road, and along the grid connection and delivery routes which would be marginally affected by the proposed works. However, having regard to the low conservation of these habitats and presence of the existing access road and access tracks, I am satisfied that there would not be any significant loss of or damage to any other habitats, subject to the implementation of mitigation measures and adherence to best construction practices.

Flora: The provision of a bat buffer zone around T21 and an access track will result in the felling of a group of mature broad-leafed trees which would have a significant adverse effect at local level. However, given that the EIAR bat surveys identified a high level of activity in the vicinity (Common & Soprano pipistrelle & Leisler's bats) I am satisfied, on balance, that preventing a collision risk for bats outweighs the retention of woodland at this location. No protected plant species were recorded within the site during the desk top studies and field surveys, with no adverse impacts anticipated.

It is noted that the EIAR Bat Buffer Zone Management Plan seeks to help balance the clearance of significant areas of forest and hedgerow to provide bat buffer zones and protect foraging bats from colliding with operational turbines, by controlling and managing the regeneration and height of vegetation within the surrounding area.

Mammals:

Badgers:

The coniferous forestry site does not offer optimum foraging conditions for Badger. However, there is a cluster of setts located in the NE corner of the site, the largest of which (S1) has been identified the EIAR Badger Report as a breeding sett with c.24 entrances which range from Disused to Active. Potential adverse impacts on this species include the destruction of all or part of the sett, construction phase disturbance especially during the breeding season which could lead to the abandonment of the sett, accidents and mortality, and the loss of foraging habitat within the group's territory, in the absence of mitigation. T18 was moved further away from S1 to minimise any direct impacts on the sett (c.50m). The mitigation measures

recommended in the EIAR Badger Report include:- avoidance; pre-construction surveys; monitoring tree and shrub clearance; Exclusion Zone (20m) around S1, security fencing and tree retention within this zone; undertake works outside the breeding season but if required then no works within 50m of the sett for general construction and 150m for noisy and vibratory activities (blasting & rock breaking); built in construction design should allow for escape from trenches; and NPWS Derogation licences as required. I am satisfied that this range of measures would protect Badgers, their main sett and nearby foraging territory, and that they should be formally included as EIAR mitigation measures. This could be addressed by way of a planning condition.

Bats:

The windfarm site offers optimum conditions for the several species of bat that were recorded foraging and commuting in significant numbers over the entire area and in the vicinity of the proposed turbines during the EIAR site surveys (incl. Natterer's, Brown Long eared, Whiskered, Leisler's and Soprano & Common pipistrelle bats).

The proposed windfarm would undoubtedly cause a temporary disturbance to bats during the **construction phase**. Although several roost and nursery sites were recorded in a number of nearby buildings, no buildings would be demolished and a 50m buffer zone would be provided around these structures, with no adverse impacts anticipated. The proposed tree felling and construction works have the potential to adversely affect and disturb bats in the absence of mitigation, however most of the bat species that frequent the site forage and commute along forestry tracks and there will be a significant net gain in access tracts post construction (c.1,524m v 5,596m) with no long-term adverse impacts anticipated.

During the **operational phase** the turbines could give rise to a **collision risk** and the EIAR carried out a Collision Risk Assessment (Appendix 6.5) for 4 x high risk species (incl. Common pipistrelle, Soprano pipistrelle, Leisler's bat & Nathusius' pipistrelle) which are present in relatively high numbers throughout the site. The collision risk for Common & Soprano pipistrelle and Leisler's bat was calculated as High at several of the survey sites and Moderate for Nathusius' pipistrelle, which could give rise to a significant adverse impact at local level. The collision risk for the

remaining bat species was considered to be low with no significant impacts anticipated. (incl. Whiskered, Natterers, Daubenton's & Brown long-eared bats).

The main **mitigation measures** comprise the provision of 50m buffer zones from blade tip to the nearest forestry/treeline/hedgerow around all turbines, and these vegetation free zones would deter foraging activity in the vicinity due to the resultant absence of prey species. This would be with the exception of T18 which is located in the vicinity of a badger sett in the NE section of the site, and the trees within 20m of the sett will be retained. Other measures to reduce bat fatalities include pitching the blades out of the wind (Feathering) which can reduce fatality rates by up to 50% according to SNH. It is noted that Leisler's bat is less habitat dependent than the other species as it favours aerial hawking and is therefore at a higher risk of collision with turbines. Curtailment is therefore proposed as a mitigation measure at several turbines (T6, 12, 16, 19, 20 & 21) which were calculated to pose a higher risk to this species. Curtailment would apply between mid-April to mid-October, between sunset and sunrise, at certain windspeeds and temperatures. Having regard to the main mitigation measures (incl. buffer zones, feathering & curtailment), I am satisfied that the collision risk for bats would not be significant during the operational phase.

There would be little or no **artificial lighting** at night during the operational phase, except for aviation lights which research to date concludes would not be problematic for foraging bats. I am satisfied that bats would gradually habituate to the windfarm during the operational phase with no significant adverse long-term impacts anticipated. I am satisfied that the surveys were substantially carried out in accordance with relevant SNH and BCI guidance.

Other mammals: The works would give rise to disturbance and displacement during the construction phase, however there would be no significant loss of foraging grounds and affected mammal species (incl. Fox, Pine martin, Hare, Stoat, Vole, Red squirrel & Wild boar) would gradually habituate to the windfarm after the works are completed. Although it is possible that Otter commutes across the site via the on-site watercourses there is no physical evidence that they use the site on a regular basis. Given that the watercourses would not be affected by in-stream works (other than at the river crossings and subject to water protection mitigation measures), no

significant adverse impacts are anticipated for Otter in terms of loss of foraging grounds or prey species. Notwithstanding this conclusion, a pre-construction survey for mammals should be carried out before works commence on the site.

Amphibians & reptiles: Except for Common frog, the desk top studies and field surveys did not record any evidence of amphibian or reptilian species (incl. Newt) within the site, although it is possible that Common Lizard is present along existing forestry tracks and in open areas, and a pre-construction survey should be undertaken should be carried out before works commence on the site.

Invertebrates: No rare or protected invertebrates were recorded during surveys.

Fisheries & aquatic species: Potential impacts are assessed in section 6.8 above.

Bird species: Potential impacts are assessed in section 6.10 below.

Invasive species:

A number of invasive plant species were recorded (incl. Japanese Knotweed & Rhododendron) mainly along the haul route and in the surrounding area and appropriate measures should be put in place to prevent the spread of such species during the construction phase. This could be addressed by way of a planning condition which should also require the preparation of an Invasive Species Management Plan.

6.9.5 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions, and most species disturbed during construction will return and gradually habituate to the operational windfarm

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent, having regard to the finding of not significant adverse impacts at project level.

Conclusion: I have considered all the written submissions made in relation to biodiversity including sensitive habitats and protected species, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion:

Having regard to the foregoing, I am satisfied that the proposed development, including the windfarm (and various turbine dimension options as summarised in sections 4.5.1 & 6.1 above), infrastructure works and grid connection, would not have any significant, adverse, long term residual impacts on any sensitive sites, habitats, flora or fauna in the area, subject to the full implementation of the EIAR mitigation measures, any recommended conditions and adherence to guidance and best construction practice. The proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, grid connections, plans or projects in the wider area.

6.10 Biodiversity (Terrestrial Ecology – incl. Birds)

6.10.1 Project description:

The proposed development would comprise the excavation and construction work associated with the erection of 21 x turbines and associated infrastructure including a met mast, substation, borrow pits, underground cabling and grid connection to the E, along with minor road works along the delivery route. The various turbine dimension options are summarised in sections 4.5.1 and 6.1 above.

6.10.2 Locational context

As previously stated, the site occupies a moderately elevated location and there are several protected European and National sites in the surrounding area. The moderately elevated windfarm site (145m to 250mAOD) is mainly characterised by commercial forestry plantations surrounded by pockets of broad-leafed trees and farmland, and the lands slope down gently to the E and W. The lands drains E to the River Arrigle and W to the Ballytarsna and Derrylackey Rivers via a network of on-site drainage ditches and watercourses which ultimately discharge to the River Barrow and River Nore SAC to the E and the Lower River Suir to the far S. The cross-country grid connection to the existing 110kV overhead power line would be located in an agricultural area that is mainly characterised by fields and hedgerows. Other protected and/or sensitive sites in the wider area include lakes, bogs, fens and woods, and it is possible that mobile species from further afield sensitive sites visit the site and environs (incl. several species of bird), and the Saltee Islands SPA is located to the far SE.

6.10.3 Environmental Impact Assessment Report

Chapter 7 of the EIAR and associated Technical Appendices response dealt with birds within the windfarm site, its environs and the wider area, and it identified the main potential impacts as habitats loss, disturbance, displacement and collision risk. Several desktop studies, scoping exercises with relevant agencies, walkover surveys

and detailed seasonal field surveys (incl. Vantage Point, Transect & Point surveys) were undertaken over various seasons. Targeted surveys were carried out for several species based on the results of the Desktop studies (incl. Hen harrier, Peregrine, Woodcock & Barn owl), and additional FI surveys for Woodcock were undertaken. Several designated sites (for birds) in the wider area were identified (incl. Saltee Island SPA). The EIAR recorded a total of 46 x species, including 15 x waterbirds, 7 x raptors and 2 x other notable species during the surveys, and it identified 12 x Key Avian Receptors. The survey results were used to identify the extent to which various species frequent and/or flyover the site, and to inform the Collision Risk and Displacement Models for several **Key Avian Receptors** (Greylag goose, Hen Harrier, Sparrowhawk, Buzzard, Peregrine, Kestrel, Water rail, Woodcock, Snipe, Lesser Black-backed Gull, Great Spotted woodpecker & Nightjar).

The EIAR stated that although there would be **Habitat loss** during the construction phase, breeding and foraging conditions would be enhanced for several species as a result of coniferous tree felling, the creation of biodiversity areas as per the Biodiversity Management Plan, and bat buffer zones around the turbines. It stated that there was potential for **Displacement** effects during the works on some ground nesting species (incl. Snipe & Woodcock) and foraging raptor species (incl. Sparrowhawk & Buzzard), which would be managed by the mitigation measures contained in the outline Construction Management Strategy and Biodiversity Management Plan. **Collision Risk** Modelling over a 35-year period was undertaken for target species. It concluded that the risk of collision was negligible for most species with no discernible adverse population impacts at international or national level, although there is potential for significant impacts on Buzzard and Kestrel at local level. The EIAR also considered **in-combination** effects. It identified a number of SPAs in the wider area, and listed several other windfarms and projects within a 20km radius of the site. It concluded that the proposed development would not have a significant adverse effect on wintering or migratory waterbirds or contribute to a barrier effect as the site is not regularly used as a migratory corridor.

EIAR Mitigation measures: The EIAR did not predict any adverse residual or in-combination impacts subject to the implementation of mitigation measures related to: avoidance by design; management of construction and future decommissioning

stages; seasonality and timing of works; pre-construction breeding bird surveys, buffer zones and postponement of works (incl. Hen harrier & Snipe); appointment of an Ecological Clerk of Works; implementation of the Biodiversity Management Plan; and post construction and operational monitoring (and in particular for Woodcock). The FI response for Woodcock did not propose any notable mitigation measures for this species given its widespread distribution throughout the site. The mitigation measures did not materially alter the significance of the impacts assessed before mitigation, except for a positive impact for Snipe.

EIAR conclusion: The EIAR concluded that there would be disturbance during the construction phase, some habitat loss and species displacement, but that the birds would gradually habituate to the operational windfarm post construction, and the collision risk and mortality rate is low for all species. The EIAR did not predict any adverse impacts for birds which frequent or traverse the windfarm site and the surrounding area, across the seasons. The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

6.10.4 Assessment:

As previously stated, I surveyed the wind farm site and the surrounding area in County Kilkenny and the neighbouring counties over a 3-day period in June 2021 and May 2022. I had regard to the relevant EIAR ornithology studies which are summarised in section 6.10.3 above. I also had regard to the concerns raised by the Observers which are summarised in sections 4.0 (incl. the NPWS, KCC, heritage groups & local residents). The concerns raised related to the potential adverse impacts on sensitive sites and bird species (incl. Hen harrier & Woodcock). I then had regard to the applicant's response to these concerns and in particular the additional Further Information survey effort and analysis for Woodcock, which is summarised in section 4.5 above, and to the various turbine dimension details (as summarised in sections 4.5.1 and 6.1). I also had regard to relevant national, regional and local planning policy, which is summarised in section 3.0, and to the presence of two operational windfarms to the S and SE of the site.

The potential impact of the proposed works on aquatic and terrestrial ecology (excl. birds) have been assessed in sections 6.8 and 6.9 above and issues related to European sites will be addressed in Section 8.0 (Appropriate Assessment).

The windfarm and substation sites are not located within a European site although there are several SPAs in the surrounding area, including the River Nore SPA to the N and NE which is designated for Kingfisher. The proposed grid connection would cross the River Arrigle and tributaries to the E which form part of the River Barrow and River Nore SAC and there is a long distance aquatic connection to the Lower River Suir SAC. There are several further afield sensitive sites (SACs, SPAs & p/NHAs) within a wider radius of the site which are designated for their importance to birds (incl. resident, breeding, migratory, water & wintering birds). The windfarm site is also frequented and / or overflowed by several other species of bird. The proposed works have the potential to affect bird species during the construction, operational and future decommissioning phases through loss of, damage to, or fragmentation of habitat, noise disturbance, displacement, and turbine collision risk. The windfarm also has the potential to contribute to cumulative barrier effects in combination with other windfarms, plans and projects in the wider area.

The EIAR carried out extensive seasonal bird surveys over a 2-year period within a 500m buffer zone around the turbines and associated infrastructure, and within a 2km radius of the site. The surveys concluded that the site offers suitable conditions for a variety of foraging and ground nesting birds, and several species were recorded within the site and the surrounding area. The results are summarised in section 6.10.3 above and I am satisfied that the survey effort substantially accords with current SNH Guidance and other relevant site and species-specific guidelines. It also carried out a desk top study of other surveys within the wider area.

The proposed development will undoubtedly cause a disturbance to birds during the construction phase as a result of the works and resultant loss of habitat, and temporary species displacement may occur. During the operational phase, the turbines have the potential to affect bird mortality rates in several species as a result of colliding with turbine rotor blades, and to act in-combination with other windfarms in the surrounding area to create a barrier effect for foraging and commuting species.

Raptors (excl. Hen Harrier): The EIAR bird count surveys noted the occasional presence of foraging raptors including Peregrine falcon and Sparrowhawk, and the more frequent presence of Buzzard and Kestrel in the vicinity of the site and environs, and flights were recorded at collision height for some of these species. The Collision Risk Model utilised the count results of the survey efforts to calculate the Collision Risk for several species. The Collision Risk Model for **Peregrine** recorded a high avoidance rate (c.98%) and a low probability of collision (c.6.3%), and it predicted c.0.07 x collisions per year which equates to c.2.3 collisions over the 35-year operational phase of the windfarm. The Collision Risk Model for **Sparrowhawk** recorded a high avoidance rate (c.98%) and a low probability of collision (c.5.7%), and it predicted c.0.17 x collisions per year which equates to c.5 collisions over the 35-year operational phase. The Collision Risk Model for **Buzzard** recorded a high avoidance rate (c.98%) and a low probability of collision (c.6.5%), and it predicted c. 2 x collisions per year which equated to c.70 x collisions over the 35-year operational phase. The Collision Risk Model for **Kestrel** recorded a high avoidance rate (c.9.5%) and a low probability of collision (c.5.8%), and it predicted c.4.8 x collisions per year which equates to c.145 collisions over the 35-year operational phase. I am satisfied that the proposed development would not pose a significant threat to Raptor populations at European or national level, although there would be some fatalities at local level for Buzzard and Kestrel. Any loss of foraging habitat would be mitigated by the measures contained in the Biodiversity Management Plan and Raptor species would gradually habituate to the area post construction. No significant adverse long-term impacts are anticipated in terms of habitat loss, displacement or mortality (at national or regional population level).

Hen Harrier: The EIAR surveys observed 15 x HH flights over the entire site, it did not record any breeding activity or nests within the site, although nests and winter roosts were recorded in the wider area including to the SE of the windfarm site. Some of the flights were recorded at collision height. The Collision Risk Model predicted c. 0.002 collisions per year which equates to c.0.1 collisions over the 35-year operational period of the windfarm. Although the area has foraging and nesting potential, it is not entirely optimal because of the mainly closed canopy coniferous tree cover which is not ideal for foraging birds. The EIAR mitigation measures provide for pre-construction breeding surveys, the temporary cessation of work in the

event that a nest is discovered and/or the creation of a 500m buffer around any identified nests, along with on-going monitoring during and after construction. The Biodiversity Management Plan would ensure the restoration and/or enhancement of the habitats post construction which would counter any adverse effects of habitat loss on this species during the works. These measures are considered acceptable in terms of site management, species protection and habitat enhancement. I am satisfied that the project would not have any adverse effects on Hen Harrier at the site or the wider area. No significant adverse long-term impacts are anticipated in terms of habitat loss, displacement or mortality.

Woodcock and Snipe: the windfarm site and environs provide a suitable habitat for these ground nesting species (breeding, nesting & foraging) which are present throughout the site, and in particular along the forestry access tracks (Woodcock). Few flights were recorded at collision height for either species. Pre-construction surveys should be undertaken before works commence and if a nest is identified, a 500m buffer should be provided until the nest has been vacated by the chicks. The proposed windfarm would not have any significant adverse effects on breeding populations of Woodcock and Snipe subject to the full implementation of the generic EIAR mitigation measures as well as additional monitoring for Woodcock (as per the FI response) and any recommended conditions. Any loss of nesting or foraging habitat would be partially mitigated by the measures contained in the Biodiversity Management Plan that would provide for 3 x new biodiversity areas, and the bat buffer zones around the turbine bases, which would have a positive impact on ground nesting species in general and Snipe in particular. The additional fencing along sections of forestry track would serve to protect ground nesting Woodcock from recreational disturbance during the operational phase (incl. dogs). Woodcock and Snipe would gradually habituate to the area post construction, and no significant adverse long-term impacts are anticipated in terms of habitat loss, displacement or mortality.

Kingfisher: the surrounding watercourses provide suitable nesting and foraging habitat for this species for which the River Nore SPA has been designated. The EIAR did not record the presence of this species within the site and environs during the walkover surveys and no flights were recorded at collision height. Pre-construction surveys should be undertaken along the River Arrigle and its tributaries

before grid connection works commence and if a nest is identified a 500m buffer should be provided around the nest until it has been vacated. Any loss of foraging habitat would be mitigated by the measures contained in the CEMP and Biodiversity Management Plan and this species would gradually habituate to the area post construction. No significant adverse long-term impacts are anticipated in terms of habitat loss, displacement or mortality.

Other species: The surrounding elevated area provides suitable nesting and foraging habitat for a wide variety of other bird species. The EIAR recorded the presence of 46 x species within the site and environs during the Vantage Point and walkover surveys (incl. Water Rail, Grey wagtail, Meadow pipit, Common sandpiper, Skylark & Great Spotted Woodpecker). Breeding locations and winter roosts were recorded for some species within the windfarm site, which also contains suitable breeding habitat for several species, but mainly outside the 500m disturbance zone. The occasional presence or foraging evidence of several other species was recorded on the site and environs (incl. Barn owl & Nightjar). Although the construction works could cause disturbance and temporary displacement, any adverse impacts would be temporary and short term, and no significant risk of collision is anticipated. Any loss of nesting or foraging habitat would be mitigated by the habitat creation, restoration and enhancement measures in the Biodiversity Management Plan, and these species would gradually habituate to the area post construction. No significant adverse long-term impacts are anticipated in terms of habitat loss, displacement or mortality.

Wintering & migratory waterbirds:

There are several European and nationally sensitive waterbodies in the wider area which are designated for their conservation importance for wintering and migratory waterbirds. These sites have been designated for their importance as coastal, freshwater or peatland habitats, although they also frequented, and/or flown over and/or between by some species of waterbird (incl. Lesser Black-backed Gull, Curlew, Greylag goose, Whooper Swan & Cormorant). The further afield sites include the Saltee Islands, Lower River Suir and Poulaphouca Reservoir which have been designated because of their importance for wintering and migratory waterbirds

of conservation interest, however most species were not recorded in significant numbers on or close to the windfarm and substation sites (except for Lesser Black-backed Gull), or at rotor blade height. Potential effects of the proposed development on European sites and their SCI species are addressed in Section 8.0 of this report (Appropriate Assessment).

Several other species of waterbird frequent the lakes and waterbodies within a c.45km radius of the windfarm site and are occasional visitors to the site (incl. Grey Heron, Curlew, Teal, Mallard, Moorhen & Golden plover). Although occasional flights were recorded at collision risk height for some of these species the EIAR Collision Risk modelling indicates that there is a negligible risk of collision with turbines during the operational phase over the 35-year lifespan of the windfarm, given their low survey numbers. Although Greylag goose (x 6) was recorded migrating over the N section of the site on one occasion, it was well outside the VP viewshed and Collision Risk Modelling was not carried out, although the hypothetical Collision Risk was estimated as c.0.02 collisions per year.

Lesser Black-backed Gull was recorded in large numbers at / over the windfarm site which is located c.45km NW of the large Saltee Island colony, during the Spring and Autumn seasons, but less so at collision risk height. This colony supports c.4% of the national breeding population and a significant proportion of this species present at / or over the windfarm sites may have migrated from Britain (non-breeding). The survey results and Collision Risk Model for this species recorded a high avoidance rate (c.99.5%) and a low probability of collision (c.6%). It predicted a total of c.1.92 collisions per year (combined spring & autumn migrations & breeding) which equates to c.58 collisions over the 35- year operational period of the windfarm.

In conclusion, no significant adverse long-term impacts on wintering and migratory waterbirds are anticipated in terms of loss of foraging or breeding habitat, species displacement, or increased mortality as a result of collisions with turbine rotor blades.

Other species: Most other species recorded within the site and surrounding area will gradually habituate to the works after the construction phase is completed, the windfarm is operational and the habitat creation, restoration and enhancement measures contained in the Biodiversity Management Plan are implemented. The risk

of collision with turbine rotor blades would be low and no significant adverse long-term impacts are anticipated in terms of habitat loss, displacement or mortality.

Barrier & cumulative effects: There are several operational, permitted and planned windfarms within a 30km radius of the site and several infrastructure projects are planned for the surrounding area. The EIAR Vantage Point surveys indicates that the windfarm site is not regularly foraged or overflowed by most migratory species associated with the further afield European and national sites although it could lie within an occasional SW to NE migratory / commuting route for Greylag goose, and along a SE to NW migratory / commuting route for Lesser Black-backed Gull. It concludes that there would be no cumulative impacts or cumulative barriers to movement as a result of in-combination effects. Given the lack on any local impacts on birds, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in-combination with other projects.

6.10.5 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions.

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent, having regard to the conclusion of no significant adverse impacts at project level.

Conclusion: I have considered all the written submissions made in relation to birds, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion:

Having regard to the foregoing, I am satisfied that the proposed development (incl. the various turbine dimension options summarised in sections 4.5.1 & 6.1 above) would not have any significant, adverse, long term or permanent impacts on bird species subject to the full implementation of the EIAR mitigation measures, any recommended conditions and adherence to all relevant guidance and best construction practice. Furthermore, the proposed development would not give rise to

any significant adverse cumulative impacts in-combination with other windfarms, grid connections, plans or projects in the wider area.

6.11 Cultural Heritage & Material Assets (Tourism & Heritage)

6.11.1 Project description

The proposed windfarm would comprise the construction of 21 x turbines along with associated site works which would include new and upgraded access tracks, underground cabling, substation, met mast, borrow pits and temporary construction compounds, along with minor works along the delivery and grid connection routes, and the provision of a public amenity area in the S section off the R704 post construction. The proposed works would inevitably give rise to ground disturbance. The various turbine dimension options are summarised in sections 4.5.1 and 6.1 above.

6.11.2 Project location

The proposed windfarm would occupy a moderately elevated rural location in SE Kilkenny close to the county boundaries with Waterford and Wexford. The lands are mainly characterised Coillte forestry plantations surrounded by farmland with several dispersed houses and farms. There are amenity areas, protected views, cultural heritage features and walking routes in the wider area on both sides of the county boundary. There are several features of cultural heritage interest in the vicinity including Jerpoint Abbey and Knocktopher Abbey to the NW, an Ogham Standing Stone to the SW and St. Molin's Holy Well to the E, as well as many ringforts and enclosures. Thomastown, Inistioge, Graiguenamanagh and St Mullins to the N, NE and E are popular tourist destinations, and Mount Juliet and Mountain View Golf Courses are located to the NW.

6.11.3 Environmental Impact Assessment Report

Chapter 15 of the EIAR dealt with archaeology and cultural heritage and several desktop and field studies were undertaken. The EIAR did not identify any National Monuments within the site. It noted the presence of two Recorded Monuments in the N and E sections of the site which include a ringfort and an unnamed structure known locally as St. Molin's Cave, and that the underlying soils may have

archaeological potential. It noted the presence of prehistoric features of archaeological interest to the S of the site (incl. megalithic tombs, ringforts, enclosures & standing stones) and several medieval sites to the NW (incl. Jerpoint Abbey). There are 9 x National Monuments within 10km of the site (incl. Ballyboodan Ogham Stone, Knothopher Church & Jerpoint Abbey) and there are 250 x Recorded Monuments within 5km of the site. The EIAR concluded that no sites of archaeological interest would be adversely affected by the proposed works subject to mitigation measures (archaeological monitoring during construction, preservation by record & avoidance).

The EIAR did not identify any Protected Structures or NIAH sites within the site or environs although it noted the presence of several Protected Structures in the wider area. It identified two Protected Structures within c.1.0km of the site (incl. a national school & railway station) and several features of heritage interest in the wider area and along the grid connection and haul routes. The EIAR concluded that the proposed works would not have an adverse impact on any of these features subject to mitigation measures (incl. monitoring of groundworks and protection of features during construction).

Parts of **Chapters 5, 6, 13, 15** of the EIAR dealt with Tourism in relation to employment, attractions, amenity areas, landscapes, views, driving and walking routes (Refer to Sections 6.4 and 6.5 above). It cited research that indicates that windfarms do not have an adverse effect on tourism and concluded that the tourism potential of the area would not be affected by the proposed turbines. **Chapter 11** of the EIAR dealt with material assets with respect to agriculture, fisheries, telecommunications, grid connections and aviation. It concluded that the windfarm would not adversely affect any of these resources or interfere with air traffic and no electromagnetic interference is expected. The EIAR did not predict any adverse impacts on cultural heritage, tourism, or material assets, subject to mitigation measures with no residual or cumulative impacts predicted.

The EIAR conclusions were not materially altered by the consideration of the various turbine dimension options that were submitted as Further Information (as summarised in sections 4.5.1 & 6.1 above).

6.11.4 Assessment

As previously stated, I surveyed the wind farm site and the surrounding area over a 3-day period in June 2021 and May 2022. I had regard to the relevant EIAR archaeological, cultural heritage, tourism and material assets studies which are summarised in section 6.11.3 above. I had regard to the concerns raised by the Observers (incl. IAA, KCC, heritage groups & local residents) which are summarised in Section 4.0, and the applicants' response to these concerns which is summarised in section 4.5 above, including the various turbine dimension details (as summarised in sections 4.5.1 & 6.1). I also had regard to relevant national, regional and local planning policy, which is summarised in Section 3.0 above.

Archaeology:

There are no National Monuments located within the windfarm site, however there are several Recorded Monuments and known sites of archaeological interest within the site and the immediately surrounding area (incl. ringforts & enclosures), and it is possible that the area may contain as yet undiscovered artefacts. The windfarm infrastructure would be located a substantial distance from any recorded features within the site (incl. St. Molin's Cave) and along the grid connection route (incl. ringforts). Although some of the Observers raised concerns about the presence of a medieval road within the site, the applicant provided cartographic evidence of its absence from early maps. However, a condition should be attached to ensure that the groundworks are monitored during the construction phase and that any discoveries are recorded and preserved by record. It is noted that Kilkenny County Council did not raise any specific concerns in relation to archaeology or monuments.

Protected structures & NIAH:

There are no Protected Structures or NIAH sites located within the windfarm site or the immediate vicinity, although there are several interesting features in the surrounding area including an old national school building and railway station. There are also several features of interest located along the delivery and haul routes (incl. houses & bridges) and care should be taken to ensure that no damage occurs to buildings and structures in the wider area. It is noted that Kilkenny County Council

did not raise any specific concerns in relation to cultural heritage subject to the attachment of standard planning conditions.

Tourism:

The main tourism issues relate to the visual impact of the proposed windfarm on the surrounding landscape and protected views along with the consequent impact on tourism and recreation (incl. walking, driving, cycling & golfing). The South Leinster Way traverses the S section of the site, and the turbines would be located to the N and S of this walking route. There are clear uninterrupted views towards the site from the local road network to the E that runs parallel to the Arrigle Valley and from the sections of the South Leinster Way that intersects with these roads. The concerns raised by the Observers (incl. heritage groups) are noted in relation to the visual impact of the proposed turbines on the area's tourism and recreational offer, and also the applicant's response to these concerns. These issues have been mainly addressed in section 6.4 above. It is noted that recent research on the impact of windfarms on tourism and recreational activities is varied and inconclusive. However, having regard to the conclusions reached in section 6.4 above, I am satisfied that the proposed development would not have a significant impact on tourism. Furthermore, the proposed windfarm would not interfere with the character or setting of any heritage features which form part of the tourism offer of the county because of the separation distances between the windfarm and these features.

Material assets:

The proposed windfarm would not have a significant impact on aviation, having regard to the separation distance to the nearest airport and subject to compliance with standard aviation conditions. It is noted that the IAA had no objections subject to its standard visibility requirements. The concerns raised by several of the Observers (incl. local residents) in relation to the protection of TV, mobile phone and internet connectivity are noted, as is the applicant's response to the concerns raised. I am satisfied that there would be no significant impacts from electromagnetic interference given the dispersed settlement pattern in the surrounding area. However, measures (Incl. regular monitoring) should be put in place to avoid interference. The operational windfarm project will contribute to the provision of renewable energy and contribute to a reduction in greenhouse gas emissions which would have a positive

environmental impact (refer to section 5.3 of the Planning Assessment of a more detailed assessment). It is also noted that Kilkenny County Council did not raise any specific concerns in relation to telecommunications or aviation subject to the attachment of standard conditions. The proposed windfarm would also not interfere with agriculture or fisheries (incl. Goatsbrdige fish farm) and felled forestry would be replaced (refer to sections 6.7 & 6.8 above for a more detailed assessment of potential impacts on soils, water quality & fisheries).

6.11.5 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions.

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent, having regard to the conclusion of no significant adverse impacts at project level.

Conclusion: I have considered all the written submissions made in relation to material assets and cultural heritage, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion:

Having regard to the above, I am satisfied that the proposed development (and various turbine dimensions as summarised in sections 4.5.1 & 6.1 above) would not adversely affect cultural heritage, tourism or material assets to any significant extent, subject to the full implementation of the EIAR mitigation measures and any recommended planning conditions. The proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, the grid connection routes, or plans and projects in the area.

6.12 Summary of interactions & Interrelationships

I have also considered the interrelationships between factors and whether this might as a whole affect the environment, even though the effects may be acceptable when considered on an individual basis. In particular the potential arises for the following interactions and interrelationships.

Population & human health:

- Noise, dust & shadow flicker
- Air Quality & climate
- Landscape & visual amenity
- Material Assets (electromagnetic interference)
- Road and traffic (safety & disturbance)

Air & climate

- Noise & dust
- Roads & traffic (emissions)
- Population & human health

Landscape

- Population & human health (visual amenity)
- Material Assets & Cultural Heritage (tourism & recreation)

Biodiversity:

- Hydrology (water quality & fisheries)
- Population & human health (water quality)
- Material assets (tree felling)
- Landscape (visual amenity)
- Soils & geology (siltation & water quality)
- Land

Land, Soil & water:

- Air quality
- Biodiversity (terrestrial & aquatic)
- Population & human health

Material Assets & Cultural Heritage:

- Population & human health
- Land
- Landscape (visual)
- Roads and traffic (disturbance & safety)

In conclusion, I am satisfied that any such impacts can be avoided, managed and mitigated by the measures which form part of the proposed development and any recommended planning conditions.

6.13 Consideration of cumulative impacts

There are several existing and permitted plans and projects located within a 20km radius of the proposed development which have the potential to act in-combination with the proposed development. These include 2 x operational windfarms to the S and SE, and several renewable energy projects (incl. solar farms and battery storage facilities), along with a number of agricultural, commercial and residential projects. However, I am satisfied that such in-combination effects can be avoided, managed and mitigated by the measures which form part of the proposed development, mitigations measures, and suitable conditions. There is, therefore, nothing to prevent the granting of permission on the grounds of cumulative effects.

6.15 Consideration of risks associated with major accidents and/or disasters

None identified and the potential impacts associated with climate change have been factored into the relevant sections of the EIAR.

6.16 Reasoned Conclusion on Significant Effects

Having regard to the examination of environmental information contained above, and in particular to the EIAR and the submissions from the planning authority, prescribed bodies and observers in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment have been identified in this report as summarised below.

- The ***risk of pollution of ground and surface waters during the construction phase*** through a lack of control of surface water during excavation and construction, the mobilisation of sediments and other materials during excavation and construction and the necessity to undertake construction activities in the vicinity of existing watercourses. The construction of the proposed project could also potentially impact negatively on ground and surface waters by way of contamination through accidents and spillages. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of mitigation measures related to: - design and avoidance; accidental spills and contamination; and drainage management.
- The ***risk of soil erosion and soil instability during the construction and operational phase*** through a lack of control over, or mismanagement of the excavation and soil/spoil removal works. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of mitigation measures related to: - stability and erosion.
- ***Biodiversity impacts*** arising from habitat loss and fragmentation, changes to the vegetation on the site, loss of foraging habitat and disturbance to badgers, birds and bats, connections to foraging, aquatic and water dependent habitats and general disturbance during the construction and operational phases. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of

mitigation measures which include: - Pre-construction Bird & Mammal Surveys; Water Quality protection measures (as above); an Invasive Species Management Plan; the appointment of an Ecological Clerk of Works; and the implementation of a Biodiversity Management Plan.

- The proposed project gives rise to an increase in **vehicle movements and resulting traffic impacts** during the construction phase and significant impacts on the road network can be avoided by the proposed works along the road network which include an upgraded site access junction. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of mitigation measures related to: - pre-construction road condition surveys; deliveries; and the implementation of a Construction Traffic Management Plan.
- **Air pollution and noise during the construction and operational phase** which would impact negatively on sensitive receptors and populations in the vicinity of the site. These impacts are substantially avoided by the limited number of sensitive receptors in close proximity to the proposed development. Any remaining impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of mitigation measures related to: - air quality/dust and noise.
- **Shadow flicker and noise during the operational phase** such as would impact negatively on sensitive receptors and populations in the vicinity of the site. These impacts are substantially avoided by the limited number of sensitive receptors in close proximity to the site and any remaining impacts would be mitigated by the agreement of a turbine curtailment strategy and measures within a Construction and Environment Management Plan.
- The project could give rise visual impacts on the **landscape** during the operational phase as a result of the installation of tall structures.

- The proposed development would have ***potentially significant positive environmental impacts*** during the operational phase from the generation of renewable energy with a corresponding reduction in carbon emissions.

In ***conclusion***, having regard to the above identified significant effects, I am satisfied that subject to mitigation measures proposed the proposed development would not have any unacceptable direct or indirect impacts on the environment.

7.0 APPROPRIATE ASSESSMENT

7.1 Compliance with Articles 6(3) of the EU Habitats Directive

The Habitats Directive deals with the Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union. Article 6(3) of this Directive requires that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. The competent authority must be satisfied that the proposal will not adversely affect the integrity of the European site.

7.2 Natura Impact Statement

The application was accompanied by a Natura Impact Statement (NIS) which contained a Stage 1 AA Screening Report and a Stage 2 NIS. The report described the site and the proposed development, and utilised the extensive data collected as part of the EIAR desk and field surveys. The reports confirmed that the proposed development would not be located within any European site, but that the grid connection would traverse one. The AA screening exercise identified 6 x European sites within a potential Zone of Influence, it had regard to the EIAR ecological surveys and assessments [water quality, aquatic & terrestrial ecology, bird and bat surveys (incl. collision risk assessments)], and it screened out the sites which would not be affected by the proposed development. The NIS report also dealt with several European sites located in the vicinity of the proposed forestry replanting areas in other parts of the country, which will be the subject to Forestry Licence requirements.

The **AA Screening** exercise identified the following European sites that have the potential to be affected by the proposed windfarm development:

- River Barrow & River Nore SAC
- River Nore SPA
- Lower River Suir SAC
- Saltee Islands SPA

The ***Natura Impact Statement*** listed the Conservation Objectives, Qualifying Interests and Special Conservation Interests for each of these sites. It identified the potential sources of direct and indirect impacts on the sites, assessed the potential impacts relative to the Conservation Objectives for each site. It had regard to the EIAR water quality assessments and ecological surveys and concluded that the risk for the habitats and species which are designated as Qualifying Interests and Special Conservation Interests for the European sites was minimal subject to the implementation of the EIAR mitigation measures to protect water quality.

The desk top studies and site surveys described the site and surrounding area along with potential connections to nearby and further afield European sites. The reports assessed the site and their environs for terrestrial, aquatic and mobile species of Special Conservation Interest and Qualifying Interest and for the European sites. The ecological characteristics of the sites were described as was the recorded presence of any QI and SCI species, and WFD/EPA/ERBD water quality data for the receiving watercourses was provided.

The NIS formally concluded that, in the light of best scientific knowledge in the field, all aspects of the proposed project which, by itself, or in combination with other plans or projects, which may affect the relevant European Sites have been considered, and that the Board is enabled to ascertain that the proposed project will not adversely affect the integrity of any of the European Sites concerned. The NIS conclusions were not altered by the Further Information response which is summarised in section 4.5 above, including the various turbine dimension options (as summarised in sections 4.5.2 & 6.1).

Having reviewed the NIS and supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, does clearly identify the potential impacts, and does use best scientific information and knowledge, and details of mitigation measures are provided. I am satisfied that the information is sufficient to allow for the appropriate assessment of the proposed development, subject to the further consideration of European sites located within an enlarged Zone of Influence (further analysis below).

7.3 AA Screening Assessment

The main issues related to ecology and the concerns raised by the Observers are summarised and addressed in section 4.0 of this report and section 6.0 contains an environmental impact assessment, and sections 6.8 to 6.10 should be read in conjunction with this assessment.

The European sites within the Zone of Influence (i.e the area over which an impact can have a potential effect in relation to proximity of European sites and the mobility of faunal species from further afield sites) of the proposed works and approximate separation distances are set out below. The applicant's bird surveys recorded the presence of bird species at the subject site that are of Special Conservation Interest for some further afield European sites.

However, having regard to the characteristics of the subject site and environs, the substantial separation distances between the proposed works and the European sites in-combination with the specific features and requirements for many of the recorded bird species (incl. habitat preference, dietary needs & foraging distances), only the European sites that have a realistic and pragmatic mobile connection to the site will be included in this Screening assessment.

The proposed windfarm development would not be located within an area covered by any European site designations, and although the proposed grid connection would traverse a watercourse covered by an SAC designation, it is not relevant to the maintenance of any such sites. The following 6 x European sites are located within the Zone of Influence of the windfarm site and their Qualifying Interests and Special Conservation Interests and approximate separation distances from the site are listed below.

European sites	Site code	Qualifying Interests	Separation distances	Links
River Barrow & River Nore SAC	002162	Estuaries & Reefs Mudflats & sandflats Salicornia & other annuals Atlantic & Mediterranean salt meadows	Intersected by GCR	Aquatic

		<p>Floating River Vegetation</p> <p>European dry heaths</p> <p>Tall herb fringe communities</p> <p>Petrifying springs</p> <p>Old sessile oak woods</p> <p>Alluvial forests</p> <p>Desmoulin's Whorl Snail</p> <p>Freshwater Pearl Mussel & Nore Pearl Mussel</p> <p>White-clawed Crayfish</p> <p>Sea, Brook & River Lamprey</p> <p>Twaite Shad & Salmon</p> <p>Otter & Killarney Fern</p>		
River Nore SPA	004233	Kingfisher	4.5km NE 7km down stream of GCR	Mobile
Hugginstown Fen	000404	Alkaline fens	5km W	No
Thomastown Quarry	002252	Petrifying springs	7.5km N	No
Lower River Suir SAC	002137	<p>Atlantic & Mediterranean salt meadows</p> <p>Floating River / Ranunculion Vegetation</p> <p>Tall herb fringe communities</p> <p>Old sessile oak & Alluvial forests</p> <p>Freshwater Pearl Mussel</p> <p>White-clawed Crayfish</p> <p>Sea, Brook & River Lamprey</p> <p>Twaite Shad & Salmon</p> <p>Otter</p>	<p>250m from haul route</p> <p>22km down stream of windfarm site</p>	<p>Aquatic</p> <p>No</p>
Saltee Islands SPA	004002	<p>Fulmar & Gannet</p> <p>Cormorant & Shag</p> <p>Lesser Black-backed & Herring Gull</p> <p>Kittiwake & Guillemot</p> <p>Razorbill & Puffin</p>	45km SW	Mobile

The potential effects relate to:

- Release and transport of pollutants in ground or surface water flowing into the European sites via on-site tributaries and watercourses.
- Ex-situ impacts on qualifying species outside the European sites but which are an integral and connected part of the population of qualifying interest species, including: -
 - Loss of habitats used by QI/SCI species.
 - Loss of foraging & commuting areas used by QI/SCI species.
 - Noise disturbance to QI/SCI species during construction.
- Interference with flight lines of species associated with the European sites or mortality related to collision with operational turbines.

Based on my examination of the NIS report and supporting information (incl. the desktop studies & field surveys), NPWS website, the NPWS, IW and KCC submissions, aerial and satellite imagery, the scale of the proposed works and nature of the likely effects, the substantial separation distance and functional relationship between the proposed works and the European sites and their conservation objectives, the site specific characteristics, the species specific characteristics and requirements (incl. habitat preference, diet & foraging distances), and the absence of suitable support habitats or an aquatic connection between the European site and the proposed works, taken in conjunction with my own assessment of the subject site and surrounding area, I conclude that a Stage 2 Appropriate Assessment is required for the following 4 x European sites which I consider to be within the Zone of Influence by reason of mobile and/or aquatic connections.

The 4 x European sites that remain after the AA Screening exercise are:

SACs	SPAs
River Barrow & River Nore (002162)	River Nore (004233)
Lower River Suir (002137)	Saltee Islands (004002)

AA Screening Conclusion

In conclusion, having regard to the nature and scale of the proposed development, to the separation of the windfarm site from the European sites, to the nature of the qualifying/conservation interests and conservation objectives of the European sites and to the available information as presented in the EIAR regarding ground and surface water pathways and mobile connections between the windfarm site and the European sites, and other information available, it is my opinion that the proposed development has the potential to affect 4 of the European sites having regard to the conservation objectives of the relevant sites, and that progression to a Stage 2 Appropriate Assessment is required.

7.4 Appropriate Assessment:

The details for the 4 remaining European sites within the Zone of Influence of the proposed development are summarised below.

Site name	QIs & SCIs	Conservation Objectives
River Barrow & River Nore SAC (002162)	<p>Estuaries & Reefs, Mudflats & sandflats, Salicornia & other annuals, Atlantic & Mediterranean salt meadows.</p> <p>Floating River Vegetation, European dry heaths, Tall herb fringe communities, Petrifying springs, Old sessile oak woods, Alluvial forests.</p> <p>Desmoulin's Whorl Snail, Freshwater Pearl Mussel & Nore Pearl Mussel, White-clawed Crayfish.</p> <p>Sea, Brook & River Lamprey, Twaite Shad & Salmon.</p> <p>Otter & Killarney Fern</p>	To maintain or restore the favourable conservation condition of the habitat(s) and/or the species for which the SAC has been selected.
River Nore SPA (004233)	Kingfisher	To maintain or restore the favourable conservation condition.
Lower River Suir SAC (002137)	<p>Atlantic & Mediterranean salt meadows.</p> <p>Floating River Vegetation, Tall herb fringe communities, Old sessile oak & Alluvial forests.</p>	To maintain or restore the favourable conservation condition of the habitat(s) and/or the species for which the SAC has been selected.

	Freshwater Pearl Mussel, White-clawed Crayfish. Sea, Brook & River Lamprey, Twaite Shad & Salmon Otter	
Saltee Island SPA (004002)	Lesser Black-backed Gull Herring Gull. Fulmar, Gannet & Cormorant Shag, Kittiwake & Guillemot Razorbill & Puffin	To maintain the favourable conservation condition.

Favourable Conservation Status is achieved when:

1. Habitats

- The natural range (and area covered) is stable or increasing.
- The specific structure and functions which are necessary for its long-term maintenance exist now and for the foreseeable future.
- The conservation status of its typical species is favourable.

2. Species

- Population dynamics data indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

River Nore SPA & River Barrow & River Nore SAC:

These European sites lie within the Zone of Influence of the proposed works as they have an aquatic connection to the site via a network of watercourses and tributaries, and the grid connection would cross the River Arrigle, which forms part of the SAC.

European site description:

These sites consist of the freshwater stretches of the Barrow and Nore River catchments. The River Barrow & River Nore SAC extends from the Slieve Bloom Mountains in Co. Offaly to the Creadun Head estuary in Co. Waterford, the site includes the River Arrigle, and it is designated for a wide variety of habitats and species. The River Nore SPA is a long, linear site that extends from Borris-in-Ossory in Co. Laois to Coolnamuck in Co. Kilkenny (c.3 km S of Inistioge), the site includes the river channel and marginal vegetation and is designated for Kingfisher.

Qualifying Interest habitats and species:

The River Nore SPA is designated for its importance to Kingfisher.

The River Barrow & River Nore SAC is designated for its importance to a wide variety of terrestrial and aquatic habitats (incl. heathland, woodland, riparian vegetation, estuarine & coastal), along with one species of mammal (Otter), several species of fish (incl. Salmon, Shad & Lampreys), and 3 x freshwater invertebrate species (incl. pearl mussels & crayfish). The full list of QI habitats and species is set out in the table above. It is noted from the NPWS documentation and accompanying maps (Map nos. 2 to 5) that several of the QI estuarine and coastal habitats are located a considerable distance downstream of the proposed works and they will not be included for further consideration. It is also noted in NPWS Map nos. 6 and 7 that several of the QI habitats and species are not located within the River Arrigle. Although they are present along the main channel of the River Nore either upstream or at a considerable distance downstream of the confluence of the two rivers, they will not be included for further consideration (Nore Freshwater Pearl Mussel, Petrifying springs, Old sessile oak woods, Alluvial forests, White-tailed crayfish, Desmoulin's Whorl Snail & Killarney fern). The remaining QI habitats and species and their main Attributes and Targets are summarised below:

Site name	Relevant QIs/SCIs	Attributes & Targets
River Barrow & River Nore SAC (002162)	<i>Floating River Vegetation</i>	Habitat Area (stable or increasing); Habitat Distribution (no decline); Hydrological regime (river flow & groundwater discharge); Substratum composition; Water chemistry; Water quality; Vegetation composition; Floodplain connectivity.

River Nore SPA (004223)	Tall herb fringe communities	Habitat distribution (no decline); Habitat area (stable); Hydrological regime (maintained); Vegetation structure (sward height); Vegetation composition (broadleaf herb: grass ratio); Vegetation composition (typical species & negative species indicator).
	Freshwater Pearl Mussel	Under review
	Sea, Brook & River Lamprey	Distribution; Population structure of juveniles; Juvenile density in fine sediment; Extent and distribution of spawning habitat; Availability of juvenile habitat.
	Twaiite Shad	Distribution (extent of anadromy); Population structure (age classes); Extent and distribution of spawning habitat (no decline); Water quality (oxygen levels); Spawning habitat quality: Filamentous algae; macrophytes; sediment (stable).
	Salmon	Distribution; Adult spawning fish; Salmon fry abundance; Out-migrating smolt abundance; Number and distribution of redds; Water quality
	Otter	No significant decline in: - Distribution, Extent of terrestrial & freshwater habitats, couching sites & holts, Availability of fish biomass & Connectivity.
	Kingfisher	None specified.

Potential direct effects: The proposed development would not be located within a European site, although the grid connection would cross the River Arrigle which is covered by the River Barrow and River Nore SAC designation. It is not relevant to the maintenance of any European site. No potential for direct effects having regard to the location and scale of the proposed development and to the separation distance between the works and the QI habitats and QI/SCI species.

Potential indirect effects:

There is potential for indirect effects on these European sites and several of their QI habitats and QI/SCI species during the **construction phase** as a result of water pollution from the unmitigated release of fine sediments and contaminated river

dredge during construction works and hydrocarbons by way of accidental spillages from machinery, which could give rise to water pollution in River Arrigle, chemical contamination and clogging of fish gills, with resultant impacts on the availability of prey biomass for the QI and SCI species Otter and Kingfisher. Further potential indirect effects relate to the loss of riparian vegetation along the River Arrigle. The uncontrolled introduction of invasive species from works vehicles could give rise to the colonisation of habitats by invasive species, with resultant impacts on the attributes and targets for the QI and SCI species, in the absence of mitigation. There is no potential for any additional significant indirect adverse effects during the **operational phase** when the works are complete.

Mitigation measures: The NIS mitigation measures, which would serve to protect the European sites and their QI habitats and QI/SCI species from adverse effects, include: -

- Implementation of a Biodiversity Management Plan.
- Preparation of a CEMP & Invasive Species Management Plan.
- Erection of site boundary fencing/buffer zones.
- Timing, seasonality & weather dependency of works.
- Appointment of Ecological Clerk of Works.
- Adherence to best construction practices.
- Surface water management measures to protect water quality including:
 - regular surface water monitoring,
 - no concrete mixing, refuelling or washing out on site,
 - waste management plan & off-site waste disposal,
 - protection of all watercourses from contamination.

Floating river vegetation & Tall herb fringe communities: The site and environs drain to the River Arrigle which forms part of the River Barrow and River Nore SAC. The NPWS Site Synopsis notes that Floating River vegetation and Tall herb fringe communities are present throughout the river systems within the SAC, and I noted the occurrence of Floating river vegetation within the River Arrigle to the N and S of the proposed grid connection crossing. Having regard to the nature the proposed development and the avoidance of in-stream works, I am satisfied that following the

implementation of the mitigation measures and any recommended conditions (incl. the management of sediments & accidental spills, and the control of invasive species) the proposed works would not have an adverse impact on water quality in the River Barrow and River Nore SAC or introduce invasive species to the watercourses during any of the works. There would be no resultant adverse effects on these QI habitats with respect to their attributes and targets (incl. Habitat Area & Distribution, Hydrological regime, Substratum composition, Water quality, Vegetation composition/diversity, and floodplain connectivity).

Fisheries: The site and environs drain to the River Arrigle which forms part of the River Barrow and River Nore SAC, and several species of fish (incl. Salmon, Shad, and Sea, River & Brook Lamprey) have been recorded in the river and its tributaries during their various lifecycle stages. Any deterioration of biological or chemical water quality or smothering of the riverbed substratum because of siltation, accidental fuel spills or poorly managed in-stream works could have adverse resultant impacts on the QI fish species, by affecting spawning grounds, food availability (incl. macro-invertebrates & macrophytes) and health (incl. clogging of fish gills). However, I am satisfied that following the implementation of the mitigation measures and any recommended conditions (incl. the management of sediments & accidental spills, ongoing water quality monitoring and the control of invasive species), the proposed development would not have an adverse impact on fisheries in the River Barrow and River Nore SAC. There would be no resultant adverse effects on these QI species with respect to their attributes and targets (incl. Distribution, Population structure & density, Extent and distribution of spawning habitat, Availability of juvenile habitat, & Water quality).

Otter: Otter has been recorded commuting and foraging along the larger rivers in the River Barrow and River Nore SAC and it is possible that it utilises the nearby watercourse and tributaries. Any deterioration of water quality because of the proposed works and resultant impacts on the availability of fish biomass for Otter could have an adverse impact on this QI species. However, I am satisfied that following the implementation of the mitigation measures (incl. the measures to protect water quality and hence the availability of prey species) the proposed development would not have an adverse impact on Otter in nearby watercourses during the construction and operational phases. Therefore, there would be no

resultant adverse effects on this QI species respect to its attributes and targets (incl. Distribution, Extent of terrestrial & freshwater habitats, Couching sites & holts, and availability of fish biomass or Connectivity).

Kingfisher: The surrounding watercourses provide suitable nesting and foraging habitat for this species for which the River Nore SPA has been designated. The EIAR did not record the presence of this species within the site and environs during the walkover surveys and no flights were recorded at collision height. Pre-construction surveys should be undertaken along the River Arrigle and its tributaries before grid connection works commence and if a nest is identified a 500m buffer should be provided around the nest until it has been vacated. Any loss of foraging habitat or diminution of water quality would be mitigated by the measures contained in the CEMP, Surface Water Management Plan and Biodiversity Management Plan. This species would gradually habituate to the area post construction, with no adverse long-term impacts are anticipated.

Potential in-combination effects: Potential indirect in-combination effects relate to damage to QI habitats and QI/SCI species because of accidental spillages and sediment run off during the junction upgrade works, and the accidental introduction of invasive species by construction vehicles. This could give rise to pollution, contamination and/or colonisation with resultant impacts on water quality, fisheries, and the availability of prey species for Otter and Kingfisher, having regard to the various plans or projects in wider area (incl. renewable energy projects, agriculture, domestic & industrial discharges and recreation) in the absence of mitigation. However, having regard to the implementation of the aforementioned mitigation measures and recommended conditions (see below), I am satisfied that there would be no adverse cumulative effects on the European sites or their QI habitats and QI/SCI species.

Suggested conditions: Compliance with IFI “Guidelines on protection of fisheries during construction works in and adjacent to waters” should be required. A Project Ecologist should be appointed to oversee the works. All plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.

Conclusion: I am satisfied that the proposed development individually or in combination with other plans or projects would not adversely affect the integrity of these European sites in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above.

Lower River Suir SAC:

This European site lies within the Zone of Influence of the proposed works as it has a long distance indirect aquatic connection to the windfarm site via a network of on and off site watercourses and tributaries and hence the River Blackwater, and a very minor short distance connection to the River Suir at various points along the turbine delivery route from Waterford (incl. minor road works at junctions).

European site description:

This SAC consists of the freshwater stretches of the River Suir immediately S of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately E of Waterford, and it is designated for a variety of habitats and species.

Qualifying Interest habitats and species:

This SAC is designated for its importance to a wide variety of terrestrial and aquatic habitats (incl. woodland, riparian vegetation & coastal), along with one species of mammal (Otter), several species of fish (incl. Salmon, Shad & Lampreys), and 2 x freshwater invertebrate species (incl. pearl mussel & crayfish). The full list of QI habitats and species is set out in the table above.

It is noted from the NPWS documentation and accompanying maps (Map no.3) that the QI coastal habitats are located a considerable distance downstream of the windfarm site and they will not be included for further consideration. It is also noted in NPWS Map nos. 4 to 7 that one of the QI habitats and species is located a considerable distance downstream of the windfarm site and the confluence of the River Blackwater with the River Suir and it will not be included for further consideration (Alluvial forests), and that several other species are either located upstream of this confluence (Freshwater Pearl Mussel & White-tailed crayfish) or along another unconnected watercourse (Old sessile oak woods). The remaining QI habitats and species and their main Attributes and Targets are summarised below:

Site name	Relevant QIs	Attributes & Targets
Lower River Suir SAC (002137)	<i>Floating River Vegetation</i>	Habitat Area (stable or increasing); Habitat Distribution (no decline); Hydrological regime (river flow & groundwater discharge); Substratum composition; Water chemistry; Water quality; Vegetation composition; Floodplain connectivity.
	<i>Tall herb fringe communities</i>	Habitat distribution (no decline); Habitat area (stable); Hydrological regime (maintained); Vegetation structure (sward height); Vegetation composition (broadleaf herb: grass ratio); Vegetation composition (typical species & negative species indicator).
	<i>Sea, Brook & River Lamprey</i>	Distribution; Population structure of juveniles; Juvenile density in fine sediment; Extent and distribution of spawning habitat; Availability of juvenile habitat.
	<i>Twaite Shad</i>	Distribution (extent of anadromy); Population structure (age classes); Extent and distribution of spawning habitat (no decline); Water quality (oxygen levels); Spawning habitat quality: Filamentous algae; macrophytes; sediment (stable).
	<i>Salmon</i>	Distribution; Adult spawning fish; Salmon fry abundance; Out-migrating smolt abundance; Number and distribution of redds; Water quality
	<i>Otter</i>	No significant decline in: - Distribution, Extent of terrestrial & freshwater habitats, couching sites & holts, Availability of fish biomass & Connectivity.

Potential direct effects: As for the River Barrow and River Nore SAC.

Potential indirect effects: As for the River Barrow and River Nore SAC.

Mitigation measures: As for the River Barrow and River Nore SAC.

Habitats & species: As for the River Barrow and River Nore SAC.

Potential in-combination effects: As for the River Barrow and River Nore SAC.

Suggested conditions: As for the River Barrow and River Nore SAC.

Conclusion: I am satisfied that the proposed development individually or in combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above.

Saltee Islands SPA:

This coastal European site lies within the Zone of Influence of the proposed windfarm as one of its SCI species has an extensive foraging range. Lesser Black-backed Gull was recorded foraging within or flying over the windfarm site during the EIAR survey work, and it was recorded foraging mainly in the N section of the site which is mainly characterised by agricultural fields.

European site description:

The Saltee Islands SPA is located c.5 km off the coast of Co. Wexford, it comprises 2 x islands which are of special conservation interest for the several species of waterbird. The islands comprise a mix of exposed rocky cliffs, shingle and boulder shores backed by boulder clay cliffs, as well as small areas of intertidal sandflats and sea caves. The site is of special conservation interest for several species of water bird (incl. Lesser Black-backed Gull) and for holding an assemblage of over 20,000 breeding seabirds.

Special Conservation Interest species:

This SPA is designated for its importance to a wide variety of waterbirds and the full list of SCI species is set out in the table above. Most of these species can be excluded from further assessment based on their coastal habitat preference, dietary needs, nesting requirements, and foraging range. The remaining SCI species and their main Attributes and Targets are summarised below:

Site name	Relevant SCIs	Attributes & Targets
Saltee Islands SPA (004002)	<i>Lesser Black-backed Gull</i>	Attributes: Breeding population abundance, Productivity rate, Distribution, Prey biomass, Barriers to connectivity & Disturbance at breeding sites. Target: No significant decline.

Potential direct effects: As for the River Barrow and River Nore SAC.

Potential indirect effects: As for the River Barrow and River Nore SAC during the **construction phase** in relation to loss of foraging habitat and a diminution in water quality and thus prey species. There is also potential for additional significant indirect

adverse effects during the **operational phase** when the works are complete in relation to the operational turbines (incl. barrier effects & collision risk).

Mitigation measures: As for the River Barrow and River Nore SAC.

Lesser Black-backed Gull: This species was recorded in large numbers at / over the windfarm site which is located c.45km NW of the large Saltee Island colony, during the Spring and Autumn seasons, but less so at collision risk height. This colony supports c.4% of the national breeding population and a significant proportion of this species present at / or over the windfarm sites may have migrated from Britain. The survey results and Collision Risk Model recorded a high avoidance rate (c.99.5%) and a low probability of collision (c.6%). It predicted a total of c.1.92 collisions per year (combined spring & autumn migrations & breeding) which equates to c.58 collisions over the 35-year operational period of the windfarm. Any loss of foraging habitat or diminution of water quality would be mitigated by the measures contained in the CEMP, Surface Water Management Plan and Biodiversity Management Plan. The proposed windfarm would not have an adverse impact on the Attributes and Targets for this species with no significant declines in Breeding population abundance, Productivity rate, Distribution, Prey biomass, Barriers to connectivity and Disturbance at breeding sites. This species would gradually habituate to the area post construction, with no adverse long-term impacts on the Saltee Island population are anticipated in terms of loss of foraging habitat, species displacement or increased mortality as a result of collisions with turbine rotor blades.

Potential in-combination effects: There are several operational, permitted and planned windfarms within a 30km radius of the site and several infrastructure projects are planned for the surrounding area. The EIAR Vantage Point surveys indicate that the site could lie along a migratory / commuting route for Lesser Black-backed Gull, however it concludes that there would be no cumulative impacts or cumulative barriers to movement as a result of in-combination effects, based on the survey results and collision risk modelling. Given the lack on any local impacts on this species, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in-combination with other projects.

Suggested conditions: As for the River Barrow and River Nore SAC.

Conclusion: I am satisfied that the proposed development (incl. the various turbine dimension options as summarised in sections 4.5.1 & 6.1 above) individually or in combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above.

Other European sites:

It is noted that several other SPAs, which have been designated for their importance for a variety of bird species, are located well outside the core foraging range for the designated species (incl. Hen harrier).

The further afield European sites located in the vicinity of the proposed forestry replanting areas (which were screened in by the applicant) are outside the scope of this assessment as they would be subject to Forestry Licence assessments.

Appropriate Assessment Conclusion:

I concur with the conclusions reached in the NIS that the proposed windfarm development (incl. cable connections and hauls routes) will have no significant adverse effects (direct, indirect or in-combination) on the Conservation Objectives, Qualifying Interests or Special Conservation Interests for the River Barrow and River Nore SAC (Site code: 002162), River Nore SPA (Site code 004233), Lower River Suir SAC (Site code: 002137), Saltee Islands SPA (Site code: 004002), or for any other European Site.

7.5 Appropriate Assessment conclusion:

I consider it reasonable to conclude on the basis of the information on the file, which I consider adequate in order to carry out a Stage 2 Appropriate Assessment, that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the European site Nos. 002162, 004233, 002137 and 004002, or any other European site, in view of the site's Conservation Objectives.

8.0 RECOMMENDATION

I recommend that planning permission should be granted for the proposed development for the reasons and considerations set down below, subject to compliance with the attached conditions and in accordance with the following Draft Order.

Reasons and considerations

Having regard to:

- a. The National Planning Framework – Ireland 2040,
- b. The Climate Action Plan, 2021,
- c. The Regional Spatial & Economic Strategy for the Southern Region 2020,
- d. the “Wind Energy Development Guidelines - Guidelines for Planning Authorities”, issued by the Department of the Environment, Heritage and Local Government in June 2006, and Draft Amendments, 2019
- e. the policies of the planning authority as set out in the Kilkenny County Development Plan, 2021 to 2017,
- f. the distance to dwellings or other sensitive receptors,
- g. the submissions made in connection with the planning application,
- h. the likely consequences for the environment and the proper planning and sustainable development of the area in which it is proposed to carry out the proposed development and the likely significant effects of the proposed development on European Sites, and
- i. the report and recommendation of the Inspector.

Proper planning and sustainable development:

It is considered that subject to compliance with the conditions set out below the proposed development would accord with European, national, regional and local planning, renewable energy, other and related policy, it would not have an unacceptable impact on the landscape or ecology, it would not seriously injure the visual or residential amenities of the area or of property in the vicinity, and it would be acceptable in terms of traffic safety and convenience. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Appropriate Assessment:

The Board agreed with the screening assessment and conclusion carried out in the Inspector's report that the River Barrow and River Nore Special Area of Conservation Site code 002162, the Lower River Suir Special Area of Conservation Site code 002137, the River Nore Special Protection Area Site code 004233 and the Saltee Islands Special Protection Area Site code 004002 are the only European sites for which there is a possibility of significant effects and must therefore be subject to Appropriate Assessment.

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposed development for European Sites in view of the site's Conservation Objectives for the River Barrow and River Nore Special Area of Conservation Site code 002162, the Lower River Suir Special Area of Conservation Site code 002137, the River Nore Special Protection Area Site code 004233 and the Saltee Islands Special Protection Area Site code 004002. The Board considered that the information before it was sufficient to undertake a complete assessment of all aspects of the proposed development in relation to the site's conservation objectives using the best available scientific knowledge in the field.

In completing the assessment, the Board considered, in particular, the following:

- (i) Site Specific Conservation Objectives for these European Sites,
- (ii) Current conservation status, threats and pressures of the qualifying interest features,
- (iii) likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,
- (iv) view of the Department of Arts, Heritage and the Gaeltacht,
- (v) mitigation measures which are included as part of the current proposal,

In completing the AA, the Board accepted and adopted the Appropriate Assessment carried out in the Inspector's report in respect of the implications of the proposed development on the integrity of the aforementioned European Sites, having regard to the site's Conservation Objectives.

In overall conclusion, the Board was satisfied that the proposed development would not adversely affect the integrity of European sites in view of the site's Conservation Objectives and there is no reasonable scientific doubt as to the absence of such effects.

Environmental Impact Assessment:

The Board completed an environmental impact assessment of the proposed development taking account of:

- (a) the nature, scale, location and extent of the proposed development on a site,
- (b) the Environmental Impact Assessment Report (EIAR) and associated documentation submitted in support of the application,
- (c) the submissions received from the prescribed bodies and observers, and
- (d) the Inspector's report.

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the applicant, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment. The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the application. The Board considered that the main significant direct and indirect effects of the proposed development on the environment are, and would be mitigated, as follows:

- Noise, vibration, dust and shadow flicker during the construction and/or the operational phases would be avoided by the implementation of the measures set out in the Environmental Impact Assessment Report (EIAR) and the Construction and Environment Management Plan (CEMP) which include specific provisions relating to the control of dust, noise and shadow flicker.
- The risk of soil instability and soil erosion during the construction and operational phases which would be mitigated by the implementation of measures set out in the Environmental Impact Assessment Report (EIAR) and the Construction and Environment Management Plan (CEMP) which include specific provisions relating to spoil management.
- The risk of pollution of ground and surface waters during the construction phase which would be mitigated by the implementation of measures set out in the Environmental Impact Assessment Report (EIAR) and the Construction and Environment Management Plan (CEMP) which include specific provisions relating to groundwater, surface water and soil erosion.
- Biodiversity impacts, including on habitats, badgers, birds, bats, fisheries and aquatic invertebrates, would be mitigated by the implementation of specific mitigation to protect badgers, birds, bats, fisheries and aquatic invertebrates, during the construction and/or operational phases and the implementation of a Biodiversity Management Plan.

- The increase in vehicle movements and resulting traffic during the construction phase would be mitigated by the upgraded site access, the preparation of a Construction Traffic Management Plan.
- Landscape and visual impacts would arise during the operational phase from the insertion of the turbines and met mast into the upland setting, the location and siting of which would assist in assimilating the works into the landscape.
- The impact on cultural heritage would be mitigated by archaeological monitoring with provision made for resolution of any archaeological features or deposits that may be identified.
- Positive environmental impacts would arise during the operational phase from the generation of renewable energy.

The Board completed an environmental impact assessment in relation to the proposed development and concluded that, subject to the implementation of the mitigation measures proposed as set out in the EIAR, and the implementation of the measures proposed in the Biodiversity Management Plan, and subject to compliance with the conditions set out below, the effects of the proposed development on the environment, by itself and in combination with other plans and projects in the vicinity, would be acceptable. In doing so, the Board adopted the report and conclusions of the Inspector.

9.0 CONDITIONS

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, including the further information received by the Board on the 26th day of November 2021, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development and the development shall be carried out and completed in accordance with the agreed particulars.

Reason: In the interest of clarity.

2. The period during which the development hereby permitted is constructed shall be 10 years from the date of this order.

Reason: In the interests of clarity.

3. This permission shall be for a period of 35 years from the date of the first commissioning of the wind farm.

Reason: To enable the planning authority to review its operation in the light of the circumstances then prevailing.

4. The developer shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Assessment Report, Natura Impact Statement and associated documentation are implemented in full, save as may be required by conditions set out below.

Reason: In the interest of protection of the environment.

5. The developer shall ensure that all soil and water quality related mitigation measures are implemented in full and monitored throughout the life cycle of the construction works and monitored throughout the operational phase, and that rock extraction within the on-site borrow pits does not extend below winter water table levels.

Reason: In the interest of protection of the environment.

6. The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed:
- (a) Between the hours of 7am and 11pm:
 - i. the greater of 5 dB(A) $L_{90,10min}$ above background noise levels, or 45 dB(A) $L_{90,10min}$, at wind speeds of 5m/s or greater
 - ii. 40 dB(A) $L_{90,10min}$ at all other wind speeds
 - (b) 43 dB(A) $L_{90,10min}$ at all other times
- where wind speeds are measured at 10m above ground level.

Prior to commencement of development, the developer shall submit to and agree in writing with the planning authority a noise compliance monitoring programme for the subject development, including any mitigation measures such as the de-rating of particular turbines. All noise measurements shall be carried out in accordance with ISO Recommendation R 1996 "Assessment of Noise with Respect to Community Response," as amended by ISO Recommendations R 1996-1. The results of the initial noise compliance monitoring shall be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm.

Reason: In the interest of residential amenity.

7. The following shadow flicker requirements shall be complied with:
- (a) Cumulative shadow flicker arising from the proposed development shall not exceed 30 minutes in any day or 30 hours in any year at any dwelling.
 - (b) The proposed turbines shall be fitted with appropriate equipment and software to control shadow flicker at dwellings.
 - (c) Prior to commencement of construction, a wind farm shadow flicker monitoring programme shall be prepared by a consultant with experience of similar monitoring work, in accordance with details to be submitted to the planning authority for written agreement. Details of monitoring programme shall include the proposed monitoring equipment and methodology to be used, and the reporting schedule.

Reason: In the interest of residential amenity.

8. The following design requirements shall be complied with:
- (a) The wind turbines will have a maximum tip height of 185 metres.
 - (b) Final details of the turbine design, hub height, tip height and blade length complying the maximum limit and within the range set out in the application documentation and the further information received by the Board on the 26th day of November 2021, along with details of colouring, shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.
 - (c) Cables within the site shall be laid underground.
 - (d) The wind turbines shall be geared to ensure that the blades rotate in the same direction.
 - (e) No advertising material shall be placed on or otherwise be affixed to any structure on the site without a prior grant of planning permission.

Reason: In the interest of visual amenity.

9. Interpretive panels shall be provided in the Recreational Area to offer information on the natural history and cultural heritage of the area, and renewable energy and climate change. The panels shall require visitors keep their dogs on a lease in the Recreational Area and along the walking trails.

Reason: To enhance the amenities of the area and to protect wildlife.

10. In the event that the proposed development causes interference with telecommunications signals, effective measures shall be introduced to minimise interference with telecommunications signals in the area. Details of these measures, which shall be at the developer's expense, shall be submitted to, and agreed in writing with, the planning authority prior to commissioning of the turbines and following consultation with the relevant authorities.

Reason: In the interest of protecting telecommunications signals and of residential amenity.

11. Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as constructed tip heights and co-ordinates of the turbines and wind monitoring masts.

Reason: In the interest of air traffic safety.

12. Prior to commencement of development, a transport management plan for the construction stage shall be submitted to, and agreed in writing with, the planning authority. The traffic management plan shall incorporate details of the road network to be used by construction traffic, including over-sized loads, and detailed arrangements for the protection of roads, bridges, culverts or other structures to be traversed, as may be required. The plan should also contain details of how the developer intends to engage with and notify the local community in advance of the delivery of oversized loads. Any works, including reinstatement works, to existing junctions on the national road network shall comply with Transport Infrastructure Ireland (TII) standards as outlined in TII Publications and shall be subject to Road Safety Audit as appropriate.

Reason: In the interest of traffic safety and the proper planning and sustainable development of the area.

13. The developer shall retain the services of a suitably qualified and experienced Ecologist to undertake pre-construction surveys at the various project elements, including any river crossings, immediately prior to commencing work in order to check for the presence of protected species in the vicinity (incl. badgers, otters, nesting birds, bats & common lizard). A 500m buffer should be placed around any protected bird species nest sites and maintained free from construction works until the nest is vacated. The mitigation measures contained in the Badger Report (EIAR Appendix 6.3) shall be implemented in their entirety. Derogation licences shall be obtained as required.

Reason: In the interest of protecting ecology and wildlife in the area.

14. The developer shall retain the services of a suitably qualified and experienced bird specialist to undertake appropriate annual bird surveys of this site. Details of the surveys to be undertaken and associated reporting requirements shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development. These reports shall be submitted on an agreed date annually for five years, with the prior written agreement of the planning authority. Copies of the reports shall be sent to the Department of Arts, Heritage and the Gaeltacht

Reason: To ensure appropriate monitoring of the impact of the development on the avifauna of the area.

15. The developer shall prepare an Invasive Species Management Plan for the written agreement of the planning authority and all plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.

Reason: In the interest of the proper planning and sustainable development of the area.

16. The construction and future decommissioning and works shall be limited between 08.00- and 18.00-hours Monday to Saturday excluding Bank Holidays.

Reason: To protect the amenities of nearby residential properties.

17. The developer shall facilitate the preservation, recording and protection of archaeological materials or features that may exist within the site. In this regard, the developer shall –

- (a) Notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development,
- (b) Employ a suitably-qualified archaeologist who shall monitor all site investigations and other excavation works, and

- (c) Provide arrangements, acceptable to the planning authority, for the recording and for the removal of any archaeological material which the authority considers appropriate to remove.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation and protection of any remains that may exist within the site.

18. Prior to the commencement of development, the community gain proposals shall be submitted to planning authority for their written agreement.

Reason: In the interest of the proper planning and sustainable development of the area.

19. On full or partial decommissioning of the wind farm, or if the wind farm ceases operation for a period of more than one year, the wind monitoring mast, the turbines concerned and all decommissioned structures shall be removed, and foundations covered with soil to facilitate re-vegetation, all to be complete to the written satisfaction of the planning authority within three months of decommissioning or cessation of operation.

Reason: To ensure satisfactory reinstatement of the site upon full or partial cessation of the project.

20. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to planning authority, to secure the satisfactory reinstatement of the site and delivery route upon cessation of the project, coupled with an agreement empowering the planning authorities to apply such security or part thereof to such reinstatement. The form and amount of the security shall be as agreed between the planning authorities and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: To ensure satisfactory reinstatement of the site.

21. The developer shall pay to the planning authority a financial contribution in respect of public infrastructure and facilities benefiting development in the area of the planning authority that is provided or intended to be provided by or on behalf of the authority in accordance with the terms of the Development Contribution Scheme made under section 48 of the Planning and Development Act 2000. The contribution shall be paid prior to the commencement of development or in such phased payments as the planning authorities may facilitate and shall be subject to any applicable indexation provisions of the Scheme at the time of payment. Details of the application of the terms of the Scheme shall be agreed between the planning authorities and the developer or, in default of such agreement, the matter shall be referred to the Board to determine the proper application of the terms of the Scheme.

Reason: It is a requirement of the Planning and Development Act 2000 that a condition requiring a contribution in accordance with the Development Contribution Scheme made under section 48 of the Act be applied to the permission.

Karla Mc Bride
Senior Planning Inspector
24th June 2022